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A COMPARATIVE STUDY OF THE CONCEPTS OF SPACE AND TIME IN INDIAN THOUGHT

Dr. KUMAR KISHORE MANDAL

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PREFACE

The present work is the outcome of hard labour and intensive study of original texts carried on for several years. The subject of my study constitutes the perennial problem of philosophy of ancient, medieval and modern periods. The results of my researches again reveal the perennial truth that entire agreement of philosophical problems is out of the question. No two doctors agree is a well known adage. Saṁkarāchārya in his Śārirakabhāṣya observes in one place 'that the interests of persons are bound to vary and their findings on any topic will be as human beings are found to be in their physical features. The doctrine of Liebnitz, namely the identity of indiscernibles, holds good in the intellectual field as much as it does in the physical world. It is the greatest wonder of Nature that there has been no repetition of two facts exactly analogous in all respects. Even the Siamese twins have exhibited features of difference not only physically but also in their judgements, tastes, emotions, and reactions. This law is found to operate with unabating force in the field of philosophy also. It is said in the Mahābhārata ; Nāsau muniryasya mataṁ na bhinnam.

Time and space are the fundamental data of science and philosophy. The realists have their shades of difference but are agreed that these two entities are real facts. They are the background and the medium of creation. The idealists only accord a provisional status to them. The sceptics and particularly the Śūnyavādins, the paragons of destructive dialectics, have voted space and time out of existence. There are intermediate degrees of difference even in the camps of the realists and also of the idealists. I have endeavoured to be faithful and loyal to the schools and their representative exponents. I have given a survey of their arguments and conclusions. But I have not been contented with the role of a faithful expositor and so

have expressed my difficulties and doubts in my criticisms of the individual theories.

The problems of time and space have been treated by almost all philosophers and various works have been written by modern scholars. The speciality of my present attempt in the fact that it gives a survey of the views and the opinions of different philosophers beginning from the dawn of the first speculation in the Vedic period down to the recentest theories of scientific philosophers in the compass of a monograph.

Fidelity has been my motto. I have had to tread a thorny and tortuous path in my explorations through the veritable forest of speculations and I am not sure whether the results achieved are commensurate with the labour undertaken by me It has, however, been a labour of love. It is extremely difficult to resist being puzzled by the journey through the labyrinth of arguments and counter-arguments which have been put forward by each philosopher in support of his positian and in refutation of rival arguments. I have come to the conclusion that notwithstanding the bewildering divergences of opinions among philosophers that time and space cannot be conjured away by waving the magician's wand. We have to reckon with them. Perhaps the instincts and the intuitions of the Vedic seers, unsophisticated by the logical devices evolved after thousands of years of thought, are correct. Space and time are the warp and woof of the physical world and mental reconstructions, whether one accepts them without reservation or heroically dismisses them by the sledge-hammer blows of dialectics. I am conscious of my limitations and the drawbacks that are inherent in my work. But I have not been allowed by my guide to postpone the presentation of my study and reflection in the interests of perfection, which is perhaps not attainable by a man of moderate resources like me. Every writer on philosophy must consider that his labours have been recompensed if they succeed in stimulating the interests of the inquisitive students. I have shown that the points of agreement

are not less important than those of difference. This may serve as an index to the possibility of achieving the greatest common measure of agreement in human speculations. Differences in approach and results need not cause despair. Unreflecting agreement is fatal to intellectual growth. The future salvation lies not in the stifling of independent thinking but in the honest expression of views and the will to focus one's attention on the points of agreement. After all, the time seems yet far off when the final truth will be reached by one and all. In the mean time, we must not be impatient of criticism and differences of outlook which rather emphasise the necessity of comparing notes with one another.

I owe deepest debt to Prof. Dr. Satkari Mookerjee, M. A., Ph. D., Director, Nava Nalanda Mahavihara, Nalanda, for his acts of kindness, encouragement and advice. But for him, abstruse Saṁskṛta texts and knotty philosophical problems would not have been intelligible to me. I am profoundly grateful to the authorities of Nava Nalanda Mahavihara for their kind co-operation. I am thankful to those writers whose books I have utilised in the composition of my thesis.

Kumar Kishore Mandal

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SCHEME OF TRANSLITERATION

VOWELS :	a ā i ī u ū ṛ ṝ ḷ e ai o au
Anusvāra	ṁ or ṅ
Visarga	ḥ
CONSONANTS :	
Gutturals	k kh g gh ṅ
Palatals	c ch j jh ñ
Cerebrals	ṭ ṭh ḍ ḍh ṇ
Dentals	t th d dh n
Labials	p ph b bh m
Semi Vowels	y r l v
Sibilants	Ś palatal sibilant pronounced like the soft s of Russian
	Ṣ cerebral sibilant as in shun
	S as in Sun
Aspirate	ḥ

ABBREVIATIONS

1.	A.	-Agni Purāṇa.
2.	A. A.	-Aitareya Āraṇyaka.
3.	A. B.	-Aitareya Brāhmaṇa.
4.	A. V.	-Atharva Veda.
5.	Ahir.	-Ahirbudhnya Saṁhitā.
6.	Abhidharma	-Abhidharmakośa.
7.	A. N.	-Aṅguttara-Nikāya.
8.	Bhv.	-Bhaviṣya Purāṇa.
9.	Br.	-Brahma Purāṇa.
10.	BV	-Brahma-Vaivartta Purāṇa.
11.	Bḍ.	-Brahmāṇḍa Purāṇa.
12.	Br. U.	-Bṛhadāraṇyaka Upaniṣad.
13.	B. S.	-Brahmasūtra.
14.	Bhā. P. or Bh. P.	-Bhāṣāpariccheda.
15.	B. S. S.	-Bombay Sanskrit and Prākrit Series.
16.	C. S. S.	-Chowkhamba Sanskrit Series.
17.	Ch. U.	-Chāndogya Upaniṣad.
18.	C. S.	-The Catuḥśataka.
19.	Cit.	-Citsukhī.
20.	D. N.	-The Digha-Nikāya.
21.	Gītā	-Bhagvad-Gītā.
22.	Gḍ. 1	-Garuḍa Purāṇa (Calcutta).
23.	Gḍ. 2	-Garuḍa Purāṇa (Bombay).
24.	H.	-Harivaṁśa.
25.	Īśa	-Īśa Upaniṣad.
26.	J. U. B.	-Jaiminiupaniṣad-Brāhmaṇa.
27.	J. U.	-Jābāla Upaniṣad.
28.	J. S.	-Jaimini Sūtras.
29.	K. B.	-Kauṣītaki Brāhmaṇa.
30.	Kena	-Kena Upaniṣad.
31.	Kaṭha	-Kaṭha Upaniṣad.
32.	K. U.	-Kauṣītaki Upaniṣad.

33. Kaivalya	-Kaivalya Upaniṣad.
34. KŪ	-Kūrma Purāṇa.
35. Kauṭilya's	-Kauṭilya's Arthaśāstra.
36. K. V. (B)	-Kathā vatthu.
37. K. K. K.	-Khaṇḍanakhaṇḍakhādya.
38. K. V.	-Kiraṇāvalī.
39. K. V. Bh.	-Kiraṇāvalībhāskara.
40. L.	-Liṅga Purāṇa.
41. Lanka	-Laṅkāvatāra Sūtras.
42. M. U.	-Maitrī Upaniṣad.
43. Māṇ. U.	-Māṇḍūkya Upaniṣad.
44. Māṇḍ. K.	-Māṇḍūkya Kārikā.
45. Muṇḍaka	-Muṇḍaka Upaniṣad.
46. Mt.	-Matsya Purāṇa.
47. M.	-Mahābhārata (B. O. R. I.).
48. MB	-Mahābhārata (Bombay Edition).
49. Mr.	-Mārkaṇḍeya Purāṇa.
50. Manu	-Manu Smṛti.
51. M. K.	-Mādhyamika Kārikā.
52. M. Vr.	-Mādhyamakavṛtti.
53. M. N.	-Majjhima Nikāya.
54. Milinda	-Milindapañho.
55. Māna	-Mānameyodaya.
56. NBh or NBH	-Nyāyabhāṣya.
57. N. K.	-Nyāyakandalī.
58. N. KU	-Nyāyakusumāñjali.
59. NLV	-Nyāyalilāvatī.
60. NM	-Nyāyamañjarī.
61. NS	-Nyāyasūtra.
62. NSVr.	-Nyāyasutravṛtti.
63. NV	-Nyāyavārttika.
64. NVTT	-Nyāyavārttika Tātparyaṭīka.
65. P.	-Padma Purāṇa.
66. P. A.	-Paippalādī Atharvaveda.
67. P. B.	-Pañcaviṁśa Brāhmaṇa.

68. P. U. –Paiṅgala Upaniṣad.
69. Praśna –Praśna Upaniṣad.
70. PPBh or PPBH –The Bhāṣya of Praśastapāda.
71. P. M. –Padārthamaṇḍana of Veṇidatta.
72. PTN –Padārthatattvanirūpaṇa.
73. Prakaraṇa –Prakaraṇapañcikā.
74. PRK –Prasthānaratnākara.
75. R. –Rāmāyaṇa.
76. R. V. –Ṛg-Veda-Saṁhitā.
77. R. B. –Rāmāyaṇa (Poona).
78. RBS –Śrībhāṣya of Rāmānuja.
79. S. B. –Śatapatha Brāhmaṇa.
80. ŚBS –Brahmasūtrabhāṣya of Śaṁkara.
81. Sub. U. –Subāla Upaniṣad.
82. S. D. S. –Sarvadarśana-Saṁgraha.
83. S. U. –Śvetāśvatara Upaniṣad.
84. SK –Skanda Purāṇa.
85. S. N. –Saṁyutta-Nikāya.
86. Sphuṭā. –Sphuṭārthā.
87. S. C. –Siddhānta Candrodaya.
88. S. M. –Siddhānta Muktāvalī.
89. S. P. –Saptapadārthī.
90. S. K. –Sāṁkhya Kārikā.
91. SBha –Sāṁkhyapravacanabhāṣya.
92. STK –Sāṁkhyatattvakaumudī.
93. SV –Ślokavārttika.
94. T. A. –Taittirīya-Āraṇyaka.
95. T. U. –Taittirīya Upaniṣad.
96. T. S. (B) –Tattvasaṁgraha.
97. T. S. P. –Tattvasaṁgraha-Pañjikā.
98. T. S. –Tarkasaṁgraha.
99. T. V. –Tantravārttika.
100. Upaniṣads with Bhāṣya of Śaṁkara
(a) ŚB, Kena
(b) ŚB, Kaṭha

(c) ŚB, Muṇḍaka
(d) ŚB, Bṛh.
(e) ŚB, Chānd
(f) ŚB, Śvetā.

101.	Var.	–Varāha Purāṇa.
102.	Vā (c)	–Vāyu Purāṇa (Calcutta).
103.	Vā	–Vāyu Purāṇa (Poona).
104.	Vi	–Viṣṇu Purāṇa.
105.	Vsm	–Viṣṇu Smṛti.
106.	V. S.	–Vaiśeṣika Sūtras.
107.	V. S. S.	–Vizianagram Sanskrit Series.
108.	VSLM	–Vaiyākaraṇasiddhāntalaghumañjuṣā.
109.	V. up.	–Vaiśeṣika Upaskāra.
110.	Yajur	–Yajurveda Saṁhitā.
111.	Yoga	–Yogavāsiṣṭha.
112.	YBhā	–Yogabhāṣya.
113.	YSū	–Yogasūtra.
114.	Yukti	–Yuktidīpikā.
115.	YVā	–Yogavārttika.
116.	Yatīndra	–Yatīndramatadīpikā.

A COMPARATIVE STUDY
OF
THE CONCEPTS OF SPACE AND TIME
(IN INDIAN THOUGHT)

CHAPTER I

(a) The Concepts of Space and Time in the Vedas and allied literatures.

The Vedas cannot be said to be a record of philosophical discourse but they clearly reflect the mature Vedic Thinking. In Vedic hymns different Gods have been invoked as the ultimate principles of the universe and each of them has been exalted as the highest. This tendency of the Vedic poets has given rise to Prof. Maxmuller's theory of 'Henotheism'. The Vedic seers hold "the belief in individual Gods alternately regarded as the highest".

Prof. N. V. Thadani[1] has tried to interpret alphabets of Samskṛta language which throw light on the concepts of space and time and the relation between the two. The very word 'Kāla' suggests a deeper meaning. 'K' being the first consonant of the alphabet indicates that it is the first in the manifest universe. 'Kh' being the second consonant of the alphabet suggests those energies that are second in manifest universe. 'Kh' stands for Ether which is identified with space. Thus time is made manifest in Ether or space, but it is an energy of the Sun. Time is superior to space which is produced out of it. It is created and destroyed not with the space but with the sun. Sun energy is always made manifest in Ether, so with the dissolution of Ether, time becomes unmanifest and is not destroyed.

In the famous Puruṣa-sūkta of the Ṛg Veda, Kāla (time) is connected with the means of sacrifice : the rains were the butter, the summer, the kindling wood, the autumn, the gifts to the priests.[2]

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1. The Mysteries of the Mahābhārat.
2. Rg. Veda–V. 10. 90

In many verses of the Ṛka, we find, the concept of Kāla is implicitly contained.[1] This rotating Kāla wheel in the region of Dyauḥ Loka has twelve non-destructible 'Ārā'. This twelve number stands either for twelve 'Rāśis' or for twelve months. Three hundred and sixty days of a year have seven hundred and twenty days and nights, day and night taken separately.

Samvatsaroāsi Parivatsaroāsīdāvatsaroāsi-vatsaroāsi.
Uṣasaste Kalpantāmahorātrāste Kalpantāmardhamāsāste
Kalpantāṅ māsāste Kalpantāmṛtavaste
Kalpantā Samvatsarsate Kalpatām,

(Yaju—27.45)

The verse mentioned above points out the various divisions of time in vedic age. They are : Samvatsar, Parivatsar, Idāvatsar, Idvavatsar, Vatsar, Uṣā, Ahorātra, Ardhamāsa, Māsa and Ṛtu. Solar and Lunar years coincide in one rotation of five years. As far as possible, Indian astrology has tried its best to bring parity between solar and lunar rotations. Lunar rotations have given rise to Ahorātra, Ardhamāsa (Pakṣa) and Māsa and Solar rotations have brought forth Ṛtu and saṁvatsarás. Weekly divisions are not found in the older traditions of this country. Astrology never mentions this division. Generally one Māsa consists of thirty days and the multiples of thirty are 15, 6. 5, 10, 3, 2. In the Aitareya Brāhmaṇa,[2] Trayaḥ is said to be consisting of three days and Dvādasāḥ of twelve days. But the reference of a week is found nowhere in the Vedic texts.

A developed concept of Kāla is present in the famous hymns of the Atharvaveda. The principle of becoming is embodied in the concept of Kāla. No activity, no change, no

1. Rg. Veda. I. 164. II–Dvādaśāraṁ Nahi Tajjarāya Varvarti Cakraṁ Paridyāmṛtasya Ā Putrā Agne mithunāso Atra Saptasatāṁ Viṁśatiśca Tasthuḥ.

2. A. B. 4. 31. 1. and 4. 4. 2.

transformation is possible without Kāla. Becoming or change is a series of movements in a given phenomenon in infinite time.[1]

Regarding the concept of Kāla, as found in the Atharvaveda, the following points may be noted :—

(i) Kāla is described as a horse with seven bridles. It is taken as the creator and sustainer of universe, of ṚK, Yajus, and Yajña. It resembles Samvatsara, which is limited and destructible. The seasons have been numbered as seven.[2]

(ii) Kāla is also conceived as uncreated. Such Kāla is lord of all, having under its sway yeṣṭha, the Brahman and the Sat.[3] It is also the creator of self-born Kāśyapa and Tapas.[4] It controls and guides all the gods and even the highest Loka along with Puṇya loka.[5]

(iii) Kāla is said to be the creator and sustainer even of Dyauḥ. Mana, Prāṇa etc. are mingled in kāla. Besides it is the god of all these principles. It is also taken as the father of Prajāpati.[6] Such kāla is defihitely superior to Saṁvatsara, as Brahmana is above the process of Saṁvatsara.[7]

(iv) Kāla is said to be the highest Tejas which produces and sustains the Bhuvanas. Both elements have evolved out of it and ultimately dessolve into it. Thus kāla is the ultimate cause of the world.[8]

(v) Kāla possessing seven wheels and thousand eyes is distinct from Pitṛ.[9] Thus there are two temporal entities.

1. A. V.-XIX-53-54.
2. A. V.-XIX-53. 12 and XIX 53-5 to 7
3. Ibid-XIX-55. 1
4. Ibid-XIX-53-8-10.
5. A. V.-XIX- 54. 5
6. A. V. XIX. 53. 8-Kāle tapaḥ, Kāle jyeṣṭham, Kāle ha sarvasyeśvaro yaḥ pitāsīt prajāpateḥ.
7. A. V.-VIII. 9. 3 and 7
8. A. V.-XIX. 53. 4
9. A. V.-XIX. 53. 1-2

The former having seven wheels is said to possess a Ṛta wheel of twelve spokes moving round the Dyaus, while the latter has only fivespoked wheel revolving round the Bhuvanas. The latter concept is similar to the concept of Saṁvatsara as depicted by the Ṛgaveda Saṁhitā.[1]

Kāla as depicted in the Atharva Veda is Super-Saṁvatsar. Saṁvatsar is only one day of Gods.[2] Thus Ṛta or becoming as embodied in the concept of Kāla has two aspects, viz. Saṁvatsara and Super-Saṁvatsara.

The analysis of Kāla made above gives us reasonable ground to accept the contention of Dr. F. Otto Schrader, who holds that the distinction between empirical time and transcedental time can be traced back to famous hymns of the Atharva Veda.

From the first two books of Paippalādi Atharvaveda, we gather that there are twelve seasons, ṛtavaḥ,[3] which intervene between the six rajasovimānāḥ. Ṛtavaḥ perhaps stands for months and rajasovimānāḥ indicates the seasons.

In this text, the four Yugas namely Kṛta, Tretā, Dvāpara and Kali have also been mentioned.[4] But these words have been used in a different sense, namely in that of the different stakes.

Further this Saṁhitā clearly mentions that Antarikṣa is the space between the heaven and the earth.[5]

In the Śatpatha Brāhmaṇa, Prajāpati has been identified with the year. As he is the creator, he is as well the symbol of time, the period in which nature completes a round and begins again. Sacrifice is identical with Prajāpati as time.

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1. R. V.-I. 164-5. 12.
2. TB.-III. 99. 22
3. P. A. (Paippalādi Atharvaveda)-I. 102
4. Ibid. I. 49
5. Ibid.-I. 93

Even if a man attains a life of full hundred years, as a result of piling up altar, still he must die as Prajāpati himself puts him to death to relieve him from the sufferings of mundane world. Here time has been shown to be both creative and destructive principles.

A developed concept of Kāla is found in the Ahirbudhnya-Saṁhitā, which is an important text of Pancarātra literature. This literature is said to be of both Vedic and Tāntric origin. But Śrīvaiṣṇavas regard it as much authoritative as the Vedas themselves. Among Pancarātra literatures, the Ahirbudhnya Saṁhitā occupies an important place. This text contains significant philosophical elements.

It is said, while describing the process of creation, that the elements of guṇa and Kāla are present in the foetus like condition of the 'Manus' in the energy (Śakti) of God. From time energy (Kāla Śakti) there arises the subtle destiny (niyati). Kāla (time) and guṇa exist in the womb of Śakti. This Śakti differs from the Prakṛti of Sāṁkhya-yoga as the guṇas are the basic elements of Prakṛti. Time is considered to be associated somehow with the operation of the guṇas. At one stage of dissolution, the universe is shown to exist only as time (Kāla). Kāla is considered as the chief transformer of all things (aśeṣa-Prakālini).[1] Time is described also as the destructive element which destroys all things, just as the violence of river destroys its banks :[2] Kalayati akhilaṁ kālyaṁ nadī-kūlam yathā rayaḥ.

The triad of Prakṛti, Puruṣa and Kāla is the chief source from which the evolution of succeeding elements follows. Prakṛti is the material cause. Puruṣa, though inactive, is that entity whose very presence leads to the process of transformation. Time is the structural cause or the dynamic and synthesising principle. But this triad cannot produce unless

1. Ahir–IV. 48

2. ibid. IV. 51 (quoted above)

it is moved by the spiritual activity of God. Thus God is the chief energising principle for this causal triad. The first evolute of Mahat is named Kāla, buddhi and prāṇa according to the predominance of tamas, sattva and rajas.[1] Gross time as Truṭi, Lava etc., the illumining activity of buddhi and the volitional activity (Prāṇa) may be considered to be the triple distinction of Mahat.[2] Dr. S. N. Dasgupta says—"There seems to be a tacit implication here that the activity implied in both thought and volition is schematized, as it were, through time. The unity of thought and volition is affected through the element of time ; for time has been regarded as the Kalana-Kāraṇa or structural cause."[3] Thus Kāla is that dynamic principle which moves the process of evolution by activising both the material and non-material elements.

The concept of space is implicity contained in the conceptions of Vedic gods and goddesses such as Dyaus, Varuṇa and Aditi.

The oldest among the gods of heaven is Dyaus. Dyaus is the personification of Sky and it leads to the idea of parentage as conceived in Ṛg Vedic hymns. Sky and earth are universal parents. The sky fertilizes the earth and the whole world is produced. In one verse of Ṛg Veda, Dyaus is compared to a steed bedecked with pearls, perhaps in an allusion to the starstudded sky. Dyaus has been spoken as smiling through the clouds, obviously meaning the lightening sky.

An important deity, Varuṇa, is identified with sky only on the basis of inferred traits and characters. Varuṇa is derived from the root Vṛ., to cover, thus Varuṇa means coverer or encompasser roughly corresponding to encompassing sky.

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1. Athir. VII. 9 Kālo buddhis tathā prāṇa iti tredhā sa gīyate tamaḥ-sattva-rajo-bhedāt tat-tad-unmeṣa-sanjñayā.
2. ibid.-VII. 11-Kālas truṭi-lavādi ātmā buddhir adhyavasāyinī. prāṇaḥ prayatnākāra ity'etā mahato bhidāḥ.
3. A History of Indian Philosophy-Vol, III-Page 47.

Varuṇa is also taken as the water god but from the Vedic hymns it is clear that he is prominently connected with aerial water rather than with ocean.

In the Ṛg Veda, Aditi has been pantheistically identified with Dyaus and antarikṣam. The whole world has evolved out of Aditi and ultimately merges into it.[1]

Ākāśa is described as space through which one can pass one's finger.[2]

In the Śatapatha Brāhmaṇa, it is said, that the space between the sky and earth, when they are separated, became Antarikṣa. It was empty so it got filled with air.[3]

In the Jaimnīya Upaniṣad Brāhmaṇa, Ākāśa is said to contain everything within itself including Agni, Vāyu, the Sun, the moon, the stars and everything that is there and that is not there. Thus Ākāśa is treated as all-inclusive entity.[4]

Ākāśa is treated as one of the evolutes in Ahirbudhnya Saṁhitā. From Tamas ahaṁkāra, śabda tanmātra is produced and from it, ākāśa comes into being. Ākāśa possesses the quality of Śabda and it makes room for all things. Thus Ākāśa should be considered as empty space which has the quality of śabda.[5]

From this analysis of vedic concepts of space and time, it is safe to arrive at the conclusion that vedic seers have exalted these elements as the ultimate principles of the universe, out of which both gross and subtle elements have evolved.

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1. Rg. Veda–I. 89. 10 Aditir dyaur aditir antarikṣam aditir mātā, sa pitā, sa putraḥ–
2. Aitareya Brāhmaṇa–III. 4. 2. 1.
3. S. B.–III. 3. 2. 19.
4. J. U. B.–I. 7. 3. 1. Savru yadyāvanvā Ayamākāśaḥ............ Tadsamāhitam.
5. Ahir–VII. 22 Sabdai–ka–guṇam ākāśam avakāśa pradāyica

Even in Greek thought, space as the 'arche' of things has been developed as late as by Philolaus. Thales, Anaxamenes. Heraclitus and Empedocles consider water, air, fire, earth either singly or collectively as the primordial of the universe. Fire, water, air and earth are more or less gross but to consider 'space' as the matrix of the universe definitely points to the keen philosophical insight of vedic seers.

Time is a more subtle element than space. In vedic texts, time is conceived as the creative and destructive principle. It is reckoned as the ultimate principle. To posit Kāla as the highest principle clearly reflects the mature genius of Vedic thinkers.

The concept of Kāla as found in the Atharvaveda may fairly be compared with the modern concept of time where a distinction is made between empirical time and transcendental time.

CHAPTER II

The Philosophical significance of space and time in the Upanişads.

The rudimentary philosophical tendencies implicit in the Vedic hymns are developed in the Āraņyakas and the Upanişads. The concept of space as apprehended by the Upanişads is detailed below :—

Ākāśa has been recognised as empty space by the Upanişads. It is also regarded as incorporeal. But this concept of Ākāśa has not always been maintained as adequate.

In the famous dialogue between Gārgī and Yājñavalkya in Bṛhad—Āraņyaka Upanişad, it is mentioned that what people call the past, the present, and the future ; are woven like warp and woof across space. It is clearly stated in the following verse.[1]

Yad bhūtāni ca bhavac ca bhavisyac ca cety ācakşate, ākāśe tad otam ca Protam ceti.

In the verse quoted above, we find the rudiments of spatio-temporal series. It clearly refers to a series where time and space are mingled together. It may fairly be compared with the modern concepts of space and time. But space is not considered here as the ultimate principle.

In Chāndogya Upanişad, it is stated :[2]

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1. Br. U.-III. 8. 4-Sa hovāca, yad urdhvam, gārgī, divaḥ, yad avāk pṛthviyaḥ yad antarā dyāvāpṛthvi ime, yad bhutāni ca bhavac ca ceti bhavisyac ca cety ācakşate, ākāşe tadotaṁ ca protaṁ ceti.

2. Ch. U.-1. 9. 1.-Asya lokasya kā gatir iti Ākāśa iti hovāca, Sarvāņi ha vā imāni bhūtāni, ākāśād eva samutpadyante, ākāśam pratyastam yanti ākāśo hi evaibhyo jyāyām, ākāśaḥ parāyaņam.

Sarvāṇi ha vā imāni bhūtāny ākāśād eva samutpadyante, ākāśam pratyastam yanty ākāśo hy evaibhyo, jyāyām, ākāśaḥ parāyaṇam.

All creatures are produced from space. They return back to Space. Space is the final goal.

It is emphasised more clearly in another verse[1] :

"Ākāśe jāyate, ākāśe abhijāyate, ākāśam upāssveti."

Yet in another verse of this upaniṣad,[2] Aum or udgītha is identified with space (Ākāśa). This Aum is regarded as the highest and the best. In another verse, Brahman has been identified with space : Khaṁ Brahmeti.[3]

Thus space has been described as the origin, support and end of all. Space as the universe is a more satisfactory doctrine than one which relates it to sound, breath, food, water, etc.

In Taittirīya upaniṣad, Ākāśa is said to be the product of self[4] : Ātman ākāśas sambhūtaḥ. Ākāśa is also mentioned as the product of human intellect or of some forces connected therewith.

Aitareya Upaniṣad says that Ākāśa has arisen from Prajñā. Chāndogya refers to Saṁkalpa as the origin of Ākāśa.

Thus a reference to space as the product of human intellect leads us to Kantian doctrine of space, according to which the idea of space is created by the thinking mind from within and applied to the sense materials presented to it from without.

According to Kausītiki Upaniṣad,[5] Ākāśa is more than

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1. ibid–VII. 12. 1.
2. ibid–1. 9. 2.–Sa esa paro varīyān Udgīthāḥ.
3. ibid–IV. 10. 4.
4. T. U. II. 1. 1.
5. K. U.–I. 6. :—Ṛtur asmi ārtvo'smi ākāśād yoneḥ Sambhūto Bhāryāyai retaḥ, Saṁvatsarasya, Saṁvatsarasya tejo, bhūtasya bhūtasyātmā.........

mere space. Man is born out of Ākāśa as from a womb. Ākāśa as a womb refers to the parentage of vedic texts. The combination of Dik and Ākāśa is found in Maitrī Upaniṣad,[1] which describes Ākāśa as a lotus flower whose petals are the four quarters and the four intermediate quarters or the cardinal points.

In Subāla Upaniṣad, space is identified with Nārāyaṇa who is conceived to be the highest principle.[2]

About Lokas, it is said that they are established in Brahman like warp and woof.[3]

In an obscure passage of Pāiṅgala Upaniṣad, it is suggested that Ākāśa (space) is all-pervasive.[4]

Though divergent opinions have been expressed by the different Upaniṣads, more or less Ākāśa has been exalted as the highest principle. Some of the views are at par with the most developed concept of the western thought, though in the rudimentary form.

It may be borne in mind that in the Upaniṣads, a constant endeavour is made to comprehend the nature of ultimate reality. Only in course of a search after the supreme reality, they have equated natural elements with the mysterious principle of reality. Ākāśa is one of such elements. Through a critical analysis of Ākāśa, they want to know the nature of all comprehending Brahman who alone can be thought as the absolute reality. From the transcendental standpoint, all other elements (including Ākāśa) do not possess reality. Brahman is a higher principle than the Ākāśa itself. It is clearly stated

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1. M. U.-VI. 4-Prāṇinām Kālanāt Kālakhyaḥ. Sarva-bhūtāni saṁharati.
2. Su. U. VI. 1-Ca diśaś ca sarvaṁ Nārāyaṇaḥ.
3. Su. U.-X. 1. Sarva lokā ātmāni brahmaṇi manaya ivautāśo ca protas ceti.
4. P. U.-13. Yathā sarva-gataṁ Vyoma.

in Bṛhadāraṇyaka upaniṣad.[1] Thus the Upaniṣads in a way deal with the transcendence of space. It is also mentioned in the various upaniṣads that space is created due to faulty observation or ignorance (Ajñāna). Thus this aspect of the concept of space very well corresponds with the concept of space based on the theory of relativity of Prof. Einstein.[2] This theory holds that the space is not determined unless the functions of the co-ordinates are known. Prof. Milne also supports this contention.

Upaniṣads conceive time (Kāla) as secondary principle. Time possesses apparent reality. From the transcendental standpoint, time is unreal. But in some of the Upaniṣads, it is also described as the ultimate principle of the universe.

In Taittīriya Āraṇyaka, it is contended :
Nadīva prabhavāt kā-cit akṣayyāt syandate yathā ;
Tāṁ nadyo'bhi samāyānti soruḥ satī na nivartate,

In the verse quoted above, kāla has been compared to an everflowing and unceasing stream. It is regarded as indivisible. For practical purposes, it is divided into days, nights, months, years etc.— in spite, its indivisibility remains intact. It is a big stream which has unfathomable store of water and whose store is ever supplemented by smaller streams, hence it never dries up.

This passage clearly makes a distinction between empirical time and transcendental time as conceived by reputed philosopher like Bergson.[3] Bergson holds that time is quite good for practical purposes but a logical analysis of this concept presents various difficulties. In his opinion, real time is named Duree or Duration. The concept of time as described in the passage is also very akin to the concept of time as advocated

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1. Br. U. III. 8. 8—...Avāyu anākāśam...
2. Essays in Science—Einstein—P. 76
3. Time and Free will—P. 115

by Whitehead. Whitehead conceives space and time as "fluent stream analysable into both space order and time order.[1]

At this stage I am prone to remark that a more developed concept of time as shown above cannot be thought of in the earliest upaniṣadic literature. Such concept of time cannot be traced even in Greek thought which is considered to be the pivot of western philosophical speculation.

In Aitareya Āraṇyaka, 'Prāṇa' is peculiarly identified with day and night which is at once symbolic of time. Day is described as the form of 'Prāṇa' and night has the form of Apāna. In the beginning of the day, Prāṇa expands hence morning is named 'Prātaḥ.' Similarly at the end of the day, sense organs contract, so it is named 'Sāyam' which is derived from 'Samāgāt.' This concept of time only suggests that time like Prāṇa is the ultimate principle. But it is not of much philosophical significance.

In Bṛhad āraṇyaka Upaniṣad, day and night are described as the source of all changes, which is at the same time symbolic of time. Saṁkara says : Viparināma hetuḥ kālaḥ. But it is only empirical time.

Further the Bṛhad-āraṇyaka Upaniṣad derives time from Brahman and exalts it as the lord of past and future.[2]

In an obscure passage of the Maitrī Upaniṣad, time is exalted as the Brahman, the highest principle, the source of all. "Time cooks all things in the great self. He who knows in what the time is cooked (dissolved), he is the knower of Veda."[3]

1. The Concept of Nature—P. 73
2. Br. U.-VI-4. 15. 16 : Yadaitam anupaśyati atmānam devam añjasa iśānām bhūta bhavyaṣya, na tato vijupgupsate. Yasmād ārvak saṁvatsaraḥ ahoviḥ parivartate tad deva jyotisaṁ jyotiḥ āyur hopāste mṛtam.
3. Mu. VI. 15-Kālaḥ pacati bhūtāni, Sarvāṇi eva mahātman Yasmin tu pacyate Kālo, yas tam veda sa vedavit.

Śvetāśvatara Upaniṣad contends :[1] Kālaḥ, svabhāvo, niyatir, yadṛchhā bhūtāni yoniḥ Puruṣa iti cintyā.

This passage suggests time, inherent nature, necessity, chance, the materiāl elements and spirit as the contending theories to be declared as the ultimate cause. It further holds that time as past, present and future is inferior to Brahman. It vaguely suggests that empirical time is inferior to Brahman. Transcendental time is definitely a higher principle.

A verse of Maitrī Upaniṣad suggests that there is a distinction between time which has parts and which is later than the sun and the stars and the non-time which is without parts and is earlier : between time which cooks (matures) and that in which time is cooked or matured. It clearly refers to the distinction between empirical time and transcendental time.[2] In one passage of Subāla Upaniṣad, it is said that Nārāyaṇa himself is time (kāla). Thus time is identified with supreme spirit. Nārāyaṇa is the divisions of time, and he is also the devourer of time. It is suggested here that Nārāyaṇa is a higher principle than time. Nārāyaṇa is the days, half-days, æons, great æons etc.[3]

In one passage of Kaivalya Upaniṣad, kāla is pantheistically identified with Brahmā (the creator).[4]

In an authoritative commentary of Māṇḍukya Upaniṣad,[5] it is suggested that time is relative. It is stated explicitly in the following verse :

Citta kālā hi ye–'ntastu Dvayakālaśca ye bahiḥ
Kalpitā eva te sarve, viśeṣo nānyahetukaḥ.

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1. Sveta-U.-I. 2
2. M. U.-VI. 15
3. Sub. U.-VI. 1. Kāla kalir dhātā brahmā prajāpatir maghavādi-vaśaś cārdha-divaśaś ca kālaḥ kalpāś.
4. Kaivalya Upanisad-... Sa kalo'gniḥ.
5. Mān. U. II. 14.

Mental events remain while the mental time remains and outward events remain during two times i.e. one event is measured by another event but in reality all these events are relative. There is no distinction between two events. The meaning of two times is explained by the following illustration :—

Suppose a person goes to a milkman to bring milk. The milkman has not milked his cow and he requests the buyer to wait till he can complete his milking work. The buyer agrees to wait till he finishes his work. Here the time of the buyer is dependent on the time of milking the cow and milkman's time is dependent on the former's time of waiting. Both the times are created by time events. In a subsequent verse, Gauḍapāda explains that in a dream, a man thinks that something exists in his mind and something exists outside it. All the external and internal events depend on the nature of the dreamer's knowledge. This illustration may be applied to waking state also; as dream is never a dream in the state of dreaming. In the waking state, whatever events happen inside while thinking and whatever happens outside depends on the consciousness of the passage of time of the waking person. Thus it is established that time is relative.

Doubtless it is that the concept of time explained above clearly proves that time is relative but this aspect of time can be traced even in other Upaniṣads. It is admitted that the divisions of time are due to erroneous vision (Ajñāna). In fact, Brahman is the only reality and the principles like space and time are only apparently real. From the practical standpoint, space and time are considered as real elements. But in most of the Upaniṣads, these two are treated as the derivatives of Brahman.

A Critical Re'sume'.

An account of Time given above brings in the metaphysical problem of Time and Eternity. Metaphysically, time as continuum contrasts with the eternity which is not in time. But the

Vedas and the Upaniṣads hold that the underlying reality (Brahman or God) is time as well as eternity. Maitri Upaniṣad clearly speaks about the two forms of Brahman—Time and the Timeless (Eternal).[1] It has been shown that everything of the world is subject to the law of time but time itself is the moving image of eternity (Brahman). Time, in other words, is an imitation of eternity, as becoming is of being. Temporal process can never be thought of apart from this eternal background. But at the same time, the temporal can never be identified with the eternal. The scriptural account transpires that time is everlasting whereas reality is eternal. Śaṁkara emphasises qualitative difference between time and eternity.[2] He asserts that even if we do good deeds for a whole life time, we cannot cross from time to eternity.

Eternity is also understood in the sense of an unextended point of time which is Now. Eternal Now is identified with God or Brahman. Such 'Now' is never in time but it is surrounded by time as a sea surrounds an island. Both past and future are simultaneously present in this Eternal Now. In the last analysis, "all states of being, seen in principle, are simultaneous in the eternal now.........(and) he who cannot escape from the standpoint of temporal succession so as to see all things in their simultaneity is incapable of the least conception of methaphysical order."[3]

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1. M. U.-6. 2.
2. Ś. B on B. U.-1. 4. 10.
3. Rene Guenon-La metaphysique Oriental-PP. 15, 17 (Quoted in Time & Eternity-A. K. Coomarswamy-P. 140).

CHAPTER III

The concepts of space and time in the Puranas, the epics and allied literatures :

Purāṇa means "What has occurred before" hence it simply represents ancient traditions. Such ancient traditions, customs, and rituals have governed the social and individual lives of the Hindus. According to the Amarakośa, Purāṇa means PAÑCA-LAKṢAṆAS alone.

The Purāṇas are the store-houses of philosophical speculations in the forms of stories, legends and fables. A commendable attempt has been made by the Paurāṇic writers to make available higher philosophical musings to that class of the Hindus who were deprived of the studies of the Vedas. It has amply served the needs of the masses. The technique and language adopted by these texts are so simple that even lay-men can follow them. The Paurāṇic litratures have more often been condemned than appreciated by the educated class. In Paurāṇic literatures philosophical data are shrouded in similes, metaphors and exaggerations. Hence a keen insight, a careful deciphering and a sympathetic approach should be adopted to bring to light the data of the hoary past.

Purāṇas are divided according to their preferential treatment of Śiva, Viṣṇu, Agni, Sūrya and Brahmā. A sound classification of these Purāṇas is made on the basis of the nature and contents of the Purāṇas. Such classification stands as :

1. The Purāṇas which embrace all the great works in Arts and Sciences in Saṁskṛta, including set Paurāṇic materials such as Garuḍa, Agni, Nārada.

2. The Purāṇas which deal with Tīrthas, Varatas, etc. such as Padma, Skanda, Bhaviṣya.

3. The Purāṇas which underwent two revisions, such as Brahma, Bhāgavat, Brahmāṇḍa.

4. Sectarian Purāṇas such as Liṅga, Vāman and Mārkaṇḍeya.
5. The old Purāṇas revised almost out of existence such as Varāha, Kūrma and Matsya.

The Purāṇas have five characteristics (pañca-lakṣaṇas) :

Sargasca Pratisargasca Vaṁso Manvantarāṇi ca.
Vaṁsānucaritam Caiva Purāṇam Pañcalakṣaṇam.

Among these characteristics, Manvantara occupies an important place. It clearly shows that the concept of time has unique position in the Paurāṇic schemes. Its twin principle Space has also been discussed to a great length. In these two principles, time is considered to be more subtle and abstract than space. It is very difficult to comprehend the exact nature of time. Attempt has been made to grasp the real nature but it has all along eluded human endeavours. Time and Space serve as back-ground to the understanding of any problem but they themselves are not easily comprehensible.

The concept of time

In the Amarakośa, Time is defined as : Kālo Diṣṭoãpyanehāpi Samayoãpi[1]. It simply states various names given to Kāla (time). Yet the question remains : What is time (Kāla) ? Ordinarily time is taken as days and nights and other divisions and sub-divisions. But this computation itself places before us certain knotty problems. The variations in the duration of day and night at different places speak of its elusive character. Thus the exact nature of day and night has not yet been ascertained. It is suggested that the real character of time cannot be comprehended on the basis of light and darkness, rather it should be conceived on the basis of succession of events. Time as succession of events cannot solve the problem, rather the confusion is more confounded. Here a pertinent question arises, whether or not time will cease to be if there is no succession of events. It cannot be replied adequately. According to Bergson, real time is eternal duration.

1. Amar. I. 4. 1.

The Paurāṇic writers have dealt with the two aspects of Kāla (time) viz. indivisible (Akhaṇḍa) and divisible (Khaṇḍa). Time in itself is indivisible, infinite, unconditioned and eternal. For practical purposes, divisions and sub-divisions are made. Thus Paurāṇic writers have distinguished between empirical time and transcendental time.

The Purāṇas have conceived Kāla as the ultimate principle. It is the very embodiment of God. It is also treated as a phase of Universal spirit[1]. The process of creation and dissolution emerge from Kāla itself. It is the very prius of the universe. It is also treated as the power of God which creates disturbance in the guṇas of Avyakta to make it manifest itself as universe[2]. Thus it is the efficient cause of the universe. Kāla is beginningless but everything originates from it. It is also infinite and eternal but it puts an end to everything of the universe[3]. This clearly shows the elusive character of time. It is the supreme power which controls and guides the destiny of the universe sportively.[4]

The Viṣṇu Purāṇa has elaborately discussed the various aspects of Kāla (time), hence a separate treatment is necessary. Kāla neither becomes nor passes away[5]. It is the creator, sustainer and destroyer of the universe[6]. The concept of Trinity is personified in Kāla (time) itself. Its chief function is to establish intimate contact between Prakṛti and Puruṣa at the time of dissolution[7]. In the words of Dāsgupta—"Thus

1. Bhg. I. 6. 4; 11. 6; 13. 45, Vā.-32. 11 and 22, P.-I. 2. 87. Gḍ.-4. 5; Bd.-1. 4. 17 and 18, L.-70. 85. 85.
2. Bhg. III. 5. 26-28.
3. Ibid-III. 29. 45.
4. Bhg.-X. 51. 19.
5. Vi.-I. 2. 15-......Kālastathā Param.
6. Ibid-I. 2. 26—
   Anādirbhagwānkālo nānto'sya dviju Vidyate.
   Avyuchchinnāstatasvete sargasthityantasaṁyamāḥ.
7. Ibid-I. 2. 24—
   Rūpāntaraṁ Taddvija Kālasaṁjñam.

there is a reference to ontological synthetic activity and ontological analytical activity of Kāla."[1]

Viṣṇu as Kāla is both the disturber (Kṣobha) or disturbed (Kṣobhya) and creation follows. This incessant cycle of creation and dissolution is going on like an ever flowing stream. The dynamic aspect of Kāla (time) is clearly visible here. The eternity and infinity of Kāla (time) are also emphasised.

First eleven chapters of Uttarbhāga of Kūrma-Purāṇa are known as Iśvara-gītā. Vijñāna Bhikṣu has written a commentary on it.

In this text it is expressively stated that Pradhāna, Puruṣa and Kāla (time) emerge from Avyakta, and from them the whole universe has come into existence,[2] Bhikṣu states that the Universe has not directly come out of Brahman but of Pradhāna, Puruṣa and Kāla (Time). A direct emanation cannot be thought of as Brahman transcends all transformations. Further direct emanation will mean that Brahman is responsible for the evils of the world. The emergence of Pradhāna, Puruṣa and Kāla (time) can be conceived on the basis of Brahman being ground cause (Ādhāra Kāraṇa). This emergence produces no change in Brahman. He remains unchanged, the change is only apparent. At the time of dissolution Avyakta remains in the state of equilibrium hence it is ineffectual. Thereby it proves the non-existence of puruṣa and prakṛti. By the will of God, Puruṣa is united with prakṛti and the point of motivation is started from the process of modification of prakṛti. This point of motivation is called Kāla (time).

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1. A History of Indian Philosophy-Dr. S. N. Dasgupta-P. 497. Vol. III.
2. Ku (c)-II. 3 -First two lines—
   Avyaktādabhavankālaḥ Pradhānam Puruṣaḥ Paraḥ.
   Tebhyaḥ Sarvamidaṁ Jātam tasmādbrahmamayaṁ jagat.

Paramātman is said to be both different from and identical with Kāla (time). Kāla (time) is considered to be efficient cause in establishing relation between Prakṛti and Puruṣa. Kāla is a superior agent to Karma as Karma is also produced by Kāla (time): Karmādīnam api Kāla-janyatvāt.

Kāla is beginningless but its chief function is to produce effect.

The following extract from Īśvara-gītā bhāṣya will illustrate:

"Na tu Sākṣād eva Brahmanaḥ ....Atra Kālādi-trayasya Brahma-Kāryatvam Abhivyaktirūpam eva Vivakṣitam Prakṛti puruṣayos ca Mahad-ādi-Kāryonmukhtaṁ ca Parmeśvara-kṛtād anyonya-Saṁyogād eva bhavati, evaṁ kālasya prakṛti-puruṣa Saṁyogakhyakāryon mukhatvam parame-śvare-ecch aya'iva bhavati."—quoted by Dr. S. N. Das Gupta.

Kāla as Diṣṭa and Daiva have been described in Mārkaṇḍeya Purāṇa. The Bombay edition of the Purāṇa includes in verses (20-21), "And she (Devī Māhātmya) who is the night of fate, laid Kāla low with the rod of fate".[1]

In the Matsya Purāṇa, an examination has been made about the superiority of Kāla (time), Daiva and Puruṣa-kāra (human exertion). These three are treated as complementary principles. But among the three, puruṣakāra is exalted as superior force: Svameva Karma Daivakhyam viddhi Dehantarāyitam Tasmāt-pauruṣa-meveh Śreṣṭhamahurmanīṣiṇaḥ.[2]

Most of the purāṇas describe kāla (time) as the son of Dhruva. With slight modification, the same verse embodying the above idea occurs there. The verse is: Dhruvasya putro Bhagvān kālo lokaprakālanaḥ. The last syllable 'Lokaprakālanaḥ' is presented as 'lokasya kālanca' in Garuḍa Purāṇa. In Agni Purāṇa, the verse stands as: 'Dhruvasya kālo lokānte'. In Śiva Purāṇa-Dharma Saṁhitā, the syllable 'loka prakālanaḥ'

1. Mr.-(Bombay Edition)-pp. 593-604 and pp. 474, 662, 680.

2 Mt.-P. 635.

is modified as 'Lokaprabhavānaḥ'. In the above verse, the destructive aspect of kāla has been shown.[1]

The two magnificent epics of Samskṛta language viz. the Mahābhārata and the Rāmāyaṇa, are repository of India's wisdom. They portray ancient ideal civilization of India. They also embody contemporary knowledge of Arts and Science. In these two epics, the various aspects of kāla (time) have been depicted under different names. They are detailed below :—

(a) Kāla (time) as Diṣṭa is such kāla (time) as is determined by the individual. Such kāla (time) comes into action due to the will or deeds of particular human beings.[2] Sometimes this Diṣṭam is identified with the Daivam.[3]

(b) Kāla (time) as ordained by supernatural forces is Daiva or fate. The activity of such kāla (time) depends on the direction of god, demons and certain agencies of nature. Human beings cannot battle Kāla or Daiva. One must learn to yield to the unalterable decree of Daiva. The following story will illustrate : Kṛṣṇa became incarnate on earth to help his friend Arjuna and bestowed on him superhuman power. Thus he became an unassailable hero. But the moment, Kṛṣṇa returned back to his supermundane abode, the tide of time changed altogether. No valour availed. He was defeated by unskilled tribesmen who took away and defiled the ladies, the widowed queens of Kṛṣṇa. The invincible warrior brooked the insolence. In words of Dr. H. Zimmer—"Time (Kāla) had turned that mysterious stream from the water of which all things appear and on whose surface they ride engulfed, to be swept in an unfeeling, reeling, indiscriminate flood".[4]

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1. A-18. 36; Br.-3. 37; Gḍ.-6. 3; H.-153, 154. Kū.-16. 13 and 14; Sidh-54. 21 and 22; VI.-I. 15. 112.
2. R.-2. 103. 8; MB.-5. 77. 10-Diṣṭāgatiḥ.
3. MB.-5. 77. 8 and 10.
4. Dr. H. Zimmer-Philosophies of India. 2. R.-1. 58. 23.

In the Rāmāyaṇa, it is said : Daivam eva param manye.[1] It is treated as the highest power known which has its sway over every thing. There is nothing beyond the accomplishment of Daiva : Nahi adaivakṛtam Kiñcit.[2] One passage suggests that Daiva is the highest and hard to overcome[3]. In the first chapter of Anuśāsana Parva of the Mahābhārata, there is a famous dialogue between Gautamī and the hunter who was insisting upon killing the serpent, the death or kāla. Mṛtyu (Death) himself appears on the scene and declares that neither snake nor he himseif but fate (kāla) was to blame for the boy's death : for every thing that happens, happens through kāla, everything that exists, exists through kāla. The dialogue reveals that kāla is not only the mover of all events but it is the chief cause of the universe. Time is operated according to the laws of Karma, there is intimate relation between Kāla and Karma which determines the course of all events. Karma is also a product of Kāla and thus it guides the modes of operation of time. Kāla is both transcendent and immanent cause of all objects. Daiva is considered to be supreme force by Bhartṛhari also. He says : Mugdhā Paśyaḥ Daivameva hi param vṛdhau kṣaye kāraṇam.

(c) Time is also conceived as Haṭha or the accidental. Haṭha is power, force, fate as necessity, impersonal necessity or accident.[3] According to this doctrine, man's course in part is determined by Haṭha. Thus it ignores the power of God and Karma. Haṭha is opposed to the concept of Īśvara.[4]

(d) Time is also named as Bhavitavya or inevitable. Bhavitavya is that which must heppen contravening ordinary tenure and course of events. In the Rāmāyaṇa, Daivam is

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1. MB.-3. 65. 41.
2. Ibid-2. 56. 17; 2. 57. 4.
3. MB.-3. 32. 12. 21.
4. Ibid-12. 32. 12 and 19.

considered to be a superior agent to Bhavitavya. It is stated therein that Bhavitavya is conditioned by Daiva.[1]

(e) Time as fixed by men for performing their duties is known as Vihita (Regulative). This aspect of time has been illustrated in very many verses of the Rāmāyaṇa and the Mahābhārata. These Epics have set down principles for the regulation of duties.

(f) Bhāgadheya is such kāla as is the cause of happiness and misery of this universe. A detailed discussion of this aspect of Kāla (time) is found in section 220 of the Mahābhārata (B. O. R. I.). Kāla consumes every thing of the universe within itself irrespective of their rank and power. Kāla is an unfathomed ocean which flows incessantly. Learned people conceive it as ultimate Brahman. Such Kāla (time) is absolute. But conditioned time is divided into days, months etc. But Kāla as Brahman is without origination and decay. In Ādiparva, it is clearly stated that Kāla (time) is the cause of happiness and misery.

(g) Puruṣakāra or time as human exertion has mostly been decried in these two Epics. But heroic characters object to the naive fatalism of Daiva. Lakṣmaṇa defies Daiva and says that even Daiva cannot hinder him. Lakṣamaṇa says : Vīrāḥ saṁbhāvitātmāno na daivam paryupāsate.[2] Daivam puruṣakāreṇa yaḥ samarthaḥ prabādhitum. In Mauśala parva of the Mahābhārata it is contended : Puruṣam hi param manye daivam niścitya muhyate.

(h) Kāla is also known as kṛtānta or that which is death or that which is lord of death or that which brings an end.[3]

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1. R.-6. 113. 24-26.
2. R.-2. 23. 17-18.
3. R.-5. 37. 3—

Aiśvarye vā suvistirṇe vyasane vā sudāruṇe.

Rajjveva puruṣaṁ baddhvā kṛtāntaḥ parikarṣati.

In Kauṭilaya's Arthaśāstra, it is mentioned that of strength, place and time, strength is the best; for a man who has strength can surmount over difficulties irrespective of uneven place and unfavourable time. Here a reference to Puruṣakāra has been made. Others hold that time is the best, because during day time the crow kills the owl and during night the owl kills the crow. But Kauṭilya holds that of strength, place and time, one is helpful to another. Thus kāla is treated as one of the causes of human success.[1]

A detailed description of kāla is given in the Vairāgya Prakaraṇa (Sargas 23-26). Mumukṣu Prakaraṇa (4-9 Sargas) and in Utapatti Prakaraṇa (60 Sarga) of Yoga Vāsiṣṭha.

Various aspects of Kāla such as Daiva, Kṛtānta, Bhavitavya and Puruṣakāra are dealt here.[2]

Time is the universal spirit that creates, sustains and destroys the Universe.[3] It is all pervasive and indestructible but it partly manifests itself through years, yugas and kalpas.[4] Time is also treated as a pantheistic entity which consumes every thing as sea bubbles.[5] Time is shown to be possessed of contradictory attributes. Time in itself is indivisible yet it is divided; it is imperceptible, yet is perceived; it is endless yet at the same time it is the cause of the end of all objects. Here a distinction has been made between the nature of absolute time and conditioned time. It also reflects the elusive character of Kāla or time.

A complete sarga has been devoted to discuss Kāla as kṛtānta. Kāla is said to be the chief designer and destroyer of the universe. With the help of Niyati, it controls and guides the course of the universe.[6] This Niyati is said to be spouse

1. Kautilya's Arthasastra–Shamsastry (translation) P. 368.
2. Yoga–I. 25. 1, 5, 6; II. 4. 11; II. 5.
3. Yoga–I. 23. 4.
4. Ibid–I. 23. 7.
5. Ibid–I. 23. 25.
6. Ibid–I. 25. 31.

of Kṛtānta. Niyati is Avaśyambhāvīrūpa or inevitable. Chaṇḍi, the beloved of Kṛtānta, is the chief destructive force through whom Kāla brings destruction to the universe.[1] Like a deceitful actor, Kāla appears at the stage, performs play-acting for a period of Kalpa and ultimately disappears altogether. At the time of dissolution, Kāla also merges into the universal spirit. But after a short recess it again creates the universe just as a child creates a mud house.[2] Thus creation and dissolution are playful acts of Kāla. Here Kāla or time has been treated as a real individual.

In mumukṣuvyavahār-Prakaraṇa, Kāla as puruṣakāra has been depicted. Puruṣakāra is such human endeavour as are done according to the dictates of scriptures and religious teachers. Other human endeavours have been declared as insane acts.[3] The identity of Daiva and puruṣakāra has been shown in some of the passages.[4] Daiva is the human efforts of the past life, so it can be conquered by the human exertion of the present life.[5] Puruṣakāra elevates even ordinary human beings to the highest rank.[6] It produces inevitable result. Niyati as Bhavitavyatā determines Puruṣakāra but ultimately it is helpful to puruṣakāra as it is the aspect of Brahman himself.[7] Efforts done with attachment in the previous birth are Karma in the present life. The force of such Karma can be expended by the good human efforts of this birth. Thus puruṣakāra is superior even to Karma. Vātsyāyana in his Kāmasūtra says that puruṣakāra (human exertion) is the chief instrument of

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1. Ibid–I. 24. 5.
2. Ibid–I. 25. 32.
3. Yoga–II. 4. 11.
4. Yoga–II. 6. 1 to 3.
5. Ibid–II. 6. 119.
6. Ibid–II. 6. 11.
7. Ibid–II. 9. 6.

achieving success in life : Puruṣa-kārapurvakatvāt sarva-pravṛtti nām upāyaḥ pratyayaḥ.[1] The epics and the Purāṇas also support this contention of Yoga-Vāsiṣṭha.

In this text, relativity of time and space has been shown. It is contended that the existence of time and space depends on thoughts.[2] Every individual experiences events according to his modes of consciousness. A moment is conceived as a Kalpa and a Kalpa is conceived as a moment under changing modes of consciousness.[3] The same night is experienced as a Kalpa by a suffering man and as a moment by happy ones. In dreaming state, a moment is experienced as a Kalpa and a Kalpa passes away as a moment. Time and space entirely depend on mental condition. A day is experienced as a year by a forlorn beloved.[4] The entire world process takes place in the millionth portion of the moment of the consciousness of the self.[5] The duration of the same world process may be a moment for some and a long age for another person.[6]

The above illustrations refer to the fact that the existence of time and space solely depends on the modes of consciousness. Modern Physics also supports the contention of this text.

In the Bhagavad-Gītā, Kṛṣna says that he is everlasting time, the all faced sustainer of the universe.[7] He also says that he is the mighty destroyer of the worlds. He comes into being for their destruction. This kāla destroys ·indestructible

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1. Kāma-Sūtra. II. 30.
2. Ibid-III. 110. 9 :

    Desakālābhidhānena Rāma saṁkalpa eva hi.

    Kathyate tadvaśādyasmāddeśakālau sthitiṁ gatau.
3. Yoga-III. 20. 29-Yathaitatpratibhā mātraṁ

    jagatsarvabhāsanam,
4. Ibid-III. 20-51-Kāntā virahiṇāmekaṁ vāsaraṁ vatsarāyate.
5. Ibid-III. 61. 17.
6. Ibid-III. 40. 30.
7. Gītā-X. 33.

Yoga also.[1] Thus the creative and destructive aspects of kāla are pointed out.

In one passage, it is suggested that the nature of time depends on the observer. The spheres of activity of an ordinary man and a self-poised man differ altogether. Day stands for activity and night for inactivity. There are two regions, the phenomenal and the noumenal, latter is the basis of phenomena. Ignorant persons consider the former as the real one. He calls that his waking life. The self-poised man withdrawing his senses from attachment to objects, regards the latter as real. He calls that his waking life. In this region, an ordinary man is blind, that is his night. Here time has been shown to be relative to the observer.[2]

A systematic exposition of this aspect of time has been attempted by Swami Madhvatirtha in his book 'The concept of time'. He establishes the relativity of time. The following fact will illustrate.

At the time of the ensuing war of the Mahābhārata, Arjuna requested Kṛṣṇa to station his chariot at a place from where he could see both the armies. When this was done, Arjuna saw and thought that so many friends and relations of his would be killed for a piece of land. He began to tremble and refused to participate in the fighting.[3] The friends and relations of Kṛṣṇa were also there but Kṛṣṇa's vision was different from that of Arjuna. In his vision, time was unimportant. He wanted Arjuna to change the nature of his observation and said, 'the soul is eternal and unborn'. According to his exposition, an attempt has been made by Kṛṣṇa to change the nature of observation. Time changes with the change of observation. When the personality shifts, the time does not mean the same thing. The question of time depends on the relationship

1. Ibid–X. 32.
2. Gītā–II. 69.
3. Ibid–I. 28–32.

of the human observer and his finite level. This relationship is not true. If the relationship is changed as stated above, time-space order will admit of a great degree of interpretation. To measure a length, he must say what he means by two points at the same time. For this he requires a definition of simultaneity. To measure a time, he must say what he means by two events at the same place viz. in his individual consciousness.

Kṛṣṇa gave a new power of observation to Arjuna by which he saw that the whole universe with its innumerable forms existed as one whole being. In this vision, he saw—Nāntaṁ na madhyaṁ na punastavādin[1]—neither the end, nor middle nor beginning of anything. Besides he said, there is no fundamental space.[2] This is exactly what Einstein has proved. The structure of space is not determined unless the functions of co-ordinates are known.

Kāla as Daiva has been described in Manusmṛti, Daiva, he says, is purvakṛta.[3] Every person has to reap the consequences of such Kāla (time). Kāla (time) as vihita or regulated by human beings is elaborately discussed in this text.[4]

The concept of Kāla (time) as described by Viṣṇusmṛti needs special mention. Kāla (time) has its sway even over God, who is the creator and destroyer of the universe. God is destroyed by mighty Kāla (time). In the Purāṇas and Epics, Kāla is treated as ultimate principle but in that aspect it is personification of God. Here in this scripture, kāla (time) is shown to be the consumer of God. It clearly suggests that kāla (time) is mightier than God.[5]

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1. Gītā–XI. 16.
2. Ibid–XI. 25–Diśonajāne.
3. Manu.–VII. 166 and XI. 47—
   Kṣiṇasya caiva Kramaśo daivātpūrvakṛtena vā.
4. Ibid–VII. 164–Svayaṁkṛtasca kāryārthamkāle Kāla eva vā.
5. Vi.–Sm.–Chapter XX.

Division of Time.

The Pauraṇic and epic writers have made different divisions and sub-divisions of conditioned time. The division of time and computation of yugas, Manvantaras and kalpas etc. come under it.

The division of time as shown in the Purāṇas are detailed below[1] :—

3 Paramāṇus make	1 Aṇu
3 Trasareṇus make	1 Vedhas
3 Vedhas make	1 Lava
3 Lavas make	1 Nimeṣa
3 Nimeṣas make	1 Kṣaṇa
5 Kṣaṇas make	1 Kāṣṭhā
15 Kāṣṭhās make	1 Laghu
15 Laghus make	1 Nāḍika
2 Naḍikas make	1 Muhurta
6 or 7 Nāḍikas make	1 Prahara or Yāma
4 Yāmas make	1 day or night
15 days and nights make	1 Pakṣa
2 Pakṣas make	1 Māsa or a day and night for pitṛs.
2 Māsas make	1 Ṛtu.
6 Months make	1 Ayanam
2 Ayanams make	1 Year
1 day of Brahmā make	1 period of Manus.
1 Night of Brahmā make	1 period of Pralaya
1 Yuga is equal to	5 years

This calculation is based on Sūrya.

Kauṭilya in his Arthaśāstra points out the following divisions of time in respective order : Truṭi, Lava, Nimeṣa, Kāṣṭhā, Kalā, Nalikā, Muhurta, Forenoon, Aftermoon, Day, Night, Pakṣa,

1. Bhg. III. 5 to 15; Bḍ.-II. 24. 58; Vā.-50. 179-182. Mt.-358-360 pages.

month, Ṛtu, Ayana, Saṁvatsara and Yuga.[1] According to Kauṭilya, Yuga is equal to five years. He does not make any mention of Manvantara and Kalpa.[2]

The Manu-Smṛti details the divisions of time in the order stated below :—

18 Nimeṣas make	1 Kāṣṭhā
30 Kāṣṭhās make	1 Kalā
30 Kalās make	1 Muhurta
30 Muhurtas make	1 Day and Night

It also refers to Manvantaras and Kalpas and to days of manes and Gods.

The calculation in respect to divisions of time in the Vāyu Purāṇa tallies with that of Manu-Smṛti differing only at one place, that in Vāyu 15 Nimeṣas make a Kāṣṭhā.[3]

The division of time as shown in Kūrma Purāṇa agrees with Manu Smṛti save that 15 twinklings make 1 Kāṣṭhā.[4]

Viṣṇu Purāṇa differs from the above table only in mentioning 15 Nimeṣas as one Kāṣṭhā.[5]

The Computation of Yuga

The term 'Yuga' at first occurs in the Ṛgveda and it denotes a period of time. Yuga refers to a 'Longer period of time' in such statements as Devānām Prathame Yuge[6] In Atharvaveda the concept of Yuga has been elaborately discussed.[7] In Atharvaveda, it is said, "We allot to thee a hundred, ten thousand years, two, three, (or) four Yugas". Yuga expressly means a period of not less than 10,000 years. In that age, the maximum

1. Shamshastry-Page 107.
2. Ibid-109.
3. Vā.-50. 179-182.
4. Kū.-Chap. V.
5. Vi.-I. 3. 8.
6. Rg. Veda-X. 72. 3.
7. AV-VII. 2. 21.

period of Yuga is indicated to be ten thousand years. The four Yugas have been clearly mentioned in Brāhmana Literature. The fourYugas, Pusya, Dvāpara, Kharva and Kṛta are mentioned in the Saḍviṁśa Brāhmana and Dvāpara in the Gopath Brāhmana. Mention has been made about Kali in Vedic literature but it is not clear whether it is the name of Yuga.

The Purāṇas speak about Yuga in a familiar tone. Kauṭilya has mentioned a Yuga of five years which he connected with the general division of time.

A correct picture of Yuga system, we find in the Manu Smṛti where the four Yugas along with Manvantaras and Kalpas have been discussed.[1] In the Mahābhārat also four Yugas have been mentioned but Manvantaras and Kalpas have been vaguely referred to.[2] Both in the Epics and the Purāṇas, the duration of the Yugas is the same. The Manu Smṛti and the Mahābhārata allot 1,000; 2,000; 3,000 and 4,000 years to four Yugas of Kali, Dvāpara, Tretā and Kṛta respectively. Thus the duration of other Yugas are reckoned by doubling, trebling and quadrupling the duration of Kali. Manu and Vyāsa add a period of 2,000 years which state the intervening periods between the different Yugas known as Sandhyā and Sandhyāṁsa. Sandhyā denotes the time of dawn in ordinary literature. According to Mr. Aiyar, Sandhyā means morning twilight and evening twilight. As Sandhyā pervades three out of thirty ghatis of a day, so one tenth of the period of each Yuga is assigned to the transition periods. Thus the period of 10,000 (ten thousand) years is increased to 12,000 years. The four Yugas cover a period of 12,000 years as detailed below :—

1.	Kṛta Yuga	4800 years	including Sandnyā and Sandhyāṁsa
2.	Tretā Yuga	3600 years	—do—
3.	Dvāpara Yuga	2400 years	—do—
4.	Kali Yuga	1200 years	—do—

1. Manu-I. 69-71.

2. Śānti Parva-Chap 224 (B. O. R. I.)

An attempt has been made by Paurāṇic writers to convert human years to divine years. A single divine year is equal to 360 human years. Manu observes-"that this period of 12,000 years is called the Yuga of a God". Thus this device of converting human years to divine years is rendered plausible, and as people were unwilling to believe that they could be in a Yuga other than the Kali, this solution of the difficulty was universally adopted. Kaliyuga of 1200 ordinary years is changed to $1200 \times 360 \times 12000 = 5184000000$ human years. This calculation affects the calcuation of higher cycles of Manvantaras and Kalpas also. According to Manu and Vyāsa, the cycle of four Yugas comprises a period of 10,000 years and including Sandhyās 12,000 years. This period tallies with the period given by the Atharva Veda. It seems that in the Atharvaveda, the four Yugas have been comprised together. Manu and Vyāsa have tried their best to maintain the old tradition though this tradition has been mutilated by the new devices to fit in with the changed circumstances.

Characteristics of Yuga

Yugas are connected with Dharma. When Yugadharma is violated, Viṣṇu appears in the form of Avatāra to set right the declining Yugadharma. It is stated in the Vāyu Purāṇa : Yugadharmapravṛtte Kāle ca Śthite Prabhuḥ Kartuṁ Dharma-Vyavasthānām jāyate manusviha.[1] The gradual decline of Yuga has been traced from the Tretā Yuga to Kali Yuga. In Kaliyuga, it has been shown on its last leg.

The concept of Yugas is relative and not the absolute one. The assignment of Yugas depends on particular place, While a particular span of place is passing through a particular Yuga, the others are passing through other Yugas. As the cycle of time is going on, all of them have to pass through all the ages. This suggests the relativity of space and time.

1. Vā-97. 65-66; Bhg-III. 11. 20-21; Mt-484 Page.

Manvantaras

Manvantra is one of the five characteristics of the Purāṇas. Every Manvantara is presided over by a lord named Manu. A particular Manvantara is named after particular presiding lord. Thus they are fourteen in number. In Vaivasvatta Manvantara, Vaivasvatta was the lord of men. The names of the Manvantaras are[1] :—

1. Svāyambhuva	8. Sāvarṇi
2. Svārociṣa	9. Dakṣa-Sārvarṇi
3. Auttama	10. Brahma-Sāvarṇi
4. Carisnava or Raivata	11. Dharma Sāvarṇi
5. Tāmasa	12. Rudra-Sāvarṇi
6. Cākṣusa	13. Raucya
7. Vaivasvatta	14. Bhautya.

Six Manvantaras have already elapsed and we are passing through the seventh which is Vaivasvatta.

Duration of Manvantara—Seventy one yugas make one Manvantara. There are seventy one padas (steps) of kāla, when it traverses one pada, one yuga elapses. Thus it covers entire Manvantaras in 71 padas. A Manvantara will constitute $71 \times 12,000$ Divine years i.e, 8,52,000 Divine years equivalent to 30,67,20,000 human years. If the excess fraction $\frac{3}{7}$ is taken into account, a Manvantara will constitute $8,57,142\frac{6}{7}$ divine years.[2]

According to Pargiter, the verse 37 of canto xlvi of Mārkaṇḍeya Purāṇa seems to be incorrect. The four yugas contain

1. Bḍ-III. 1. 3-116; Br-5. 1-64; H-406-544; Śiddh-58. 2-82; Vā-100. 3-118; Mr-XLVI (canto)-(Cal) Mt-9. 139; Vi-III. 1 & 2 chapters; Kū-51. 1-36; Gḍ-I-LXXXVII (canto)

2. Vā (c)-57. 33; Manu. I. 79—
Yatprāgdvādas'asāhasramuditaṁ daivikaṁ yugam.
Tadekasaptatigunaṁ Manvantaramihocyate.

12,000 divine years or 51,84,000,000 human years and 71 times this period contains 8,52,000 divine years or 306,720,000 human years. This latter period agrees with the enumeration in verse 36 (viz 30,67,20,000 years), but the text suggests 8,000 + 52,000 i.e. 60,000 divine years., unless we read Sata-Sahasrāṇi for Varṣa-Sahasrāṇi. 'Yutam' seems wrong as regards grammar and meaning. This does not agree with verse 31, if we take the words 'this period' to refer to verses 35, 36 and 37. In verse 31 one of Brahmā's days is said to be 12,000,000 divine years, but 14 times the period mentioned in latter verses contain 11,928,000 divine years, or 4,294,080,000 human years. We must bring in here the excess fraction referred to in verse 34, which by calculation is found to be $\frac{3}{7}$, $71\frac{3}{7}$ times the Yugas of 12,000 divine years = $8{,}57{,}142\frac{6}{7}$ divine years of the Manvantara and 14 times this last period is exactly equal to 12,000,000 years of Brahmā's day.

In the Bhagvad-Gītā, the number of Manvantara has been fixed at four only.[1] The Mahābhārata furnishes information about Manvantaras but about the number it suggests four. The Manu Smṛti refers to Manvantaras as innumerable (Manvantrāni asaṅkhyāni)[2] and does not point out the number. In Purāṇas, fourteen Manvantaras have been universally mentioned. 'Innumerable' as suggested by the Manusmṛti should be taken to signify endless cycle of creation and dissolution. It seems that the concept of Manvantara and Kalpa are post-epic developments.

Kalpas and Pralayas

After describing the five Lakṣaṇas, Sūta refers to Kalpa[3] in the Vāyu Purāṇa. A Kalpa is so named as Brahmā ordained it : Kalpayāmāsa vai Brahmā tasmāt Kalpo nirucyate.[4] At

1. Gita-X. 6. catvāro Manavastathā.

2. Manu-I. 80.

3. Vā (c)-IV. 10-13; Bhg. III. 11, Br.-PP. 1058-1061.

4. Vā (c)-VII. 71.

the end of thousand chaturyugas along with Manvantaras, the Kalpa lord Mahādeva creates this universe. A day and night of Brahmā are each equal to a period of time called Kalpa. To calculate higher periods of time, Kalpa is a measuring unit. According to Manu and Vyāsa, the four yugas form a yuga of God and a thousand such yugas make a Kalpa of 12,000,000 years. At the close of such a Kalpa, the universe is destroyed by great deluge (Pralaya). The other method of calculating a Kalpa as followed by the Purāṇas indicates that 14 times the Manvantaras make a kalpa which contains 4,320,000,000 years.[1] The first calculation depends on human years while the latter depends on divine years.

In the Vāyu Purāṇa, the number of Kalpa is said to be 33.[2] At another place, the number of Kalpas is mentioned as ten.[3] Past and future Kalpas cannot be numbered. They are as infinite as the moments are.[4]

The principal Pralayas are named as the Nitya Pralaya, Naimittika Pralaya, the Prākṛta Pralaya and the Ātyantika Pralaya.[5]

The Ātyantika Pralaya concerns the individual when a yogi attains perfect knowledge, he becomes one with Parameśvara. Thus he escapes the cycle of birth and rebirth.

The Nitya Pralaya refers to the constant change of the universe. Each object is undergoing changes every moment.

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1. Bhg-III. 11. 23—

   Niśāvasāna ārabdho Lokakalpo'nuvartate.

   Yāvaddinaṁ bhagavato manūn bhuñjaṅscaturdaśa.
2. Vā (c)-Chapter XXI
3. Ibid-VII. 27—

   Tatra Kalpān daśa sthitvā satyaṁ gacchante vai punaḥ.
4. Yoga-I. 27. 32—

   Kalpābhidhānakṣaṇajīvino hi Kalpaughasaṁkhyā Kalane viriñcayāḥ.
5. Bhg-II. 12; Vi-I. 7. 40-48; Mt-P. 485.

The Naimittika Pralaya takes place at the end of each Kalpa when Brahmā remains in the state of sleep.

The Prākṛta Pralaya is the last stage of dissolution when every element merges into its higher element-prithvi into Apas, Apas into Agni and so on. Thus they ultimately merge into Avyakta.

This universe itself is beginningless and endless. Likewise Kalpas and Pralayas are also beginningless and endless. The Kalpas and Pralayas follow each other intermittently.[1]

Madam Blavatsky says—"In sober truth they are infinite; for they never had a commencement ; or in other words, there never was a first kalpa nor will there be a last in eternity".[2]

A critical estimate :—

In course of our discussion on Kāla or time, stated in the Purāṇas and the later literatures such as Kauṭilya's Arthaśāstra etc., we find that the metaphysical problem has become implicated with the grand problem of Ethics, viz, freedom and necessity. Time is the most important factor in moral and religious activities. It seems almost certain that there were thinkers in India who had made time the prius of creation. Time has in this line of thought been identified with the personal God. In fact, if time can be invested with self-consciousness and self-directed will, it can be equated with God. When Raghunātha Śiromaṇi, the great logician of Bengal, in the 16th Century A.D. propounded the theory that time should be equated with God, he only voiced a very ancient theory which exercised enormous influence on the ethical thought of India for centuries.

From the account given above, time is found to be the creative principle and also the negative principle of destruction. To the Bhagvad-gītā; God describes himself as Kāla or time,

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1. Yoga-4. 7. 80.
2. Secret Doctrine-Vol. I-Page 395.

the devourer and exterminator of the whole creation (Chap. II—Gītā). Now the question of supreme importance for Ethics arises as to whether the course of world events is entirely determined or there is scope for human-exertion to undo the dead-weight of past Karma. It is the issue of freedom versus determinism. In India the School of Maskari Gosāla is credited with the theory of irrevocable fatalism.[1] They were called Akriyāvādins. They did not believe in the efficacy of Karma or the value or disvalue of moral action. The best course of action is to refrain from all acts and take the events–pleasurable or painful—as a matter of course without either self-exaltation or depression. This theory is the apotheosis of fatalism with its consequential inactivism. It makes morality and religion absolutely nugatory.

Buddha raised a relentless crusade against this dangerous heresy. We find in the Mahābhārata, concrete accounts of Kāla as the sole determining factor irrespective of all exertions of man to extricate himself from the meshes of misery and degradation. Man is thus the slave of time and circumstances. The wisest policy will be the *Kotow* to the inevitable. We find also such sentiments put in the mouth of Rāma, the hero of the Rāmāyaṇa. It must, however, be admitted that the doctrine of freedom as opposed to determinism is an intractable and an inscrutable one. So far as the present world is concerned almost every age gives illustrations of the futility of human endeavour. There have been wars with their results namely victory and defeat. The defeated nation finds it handy to seek consolation in the irreversible dispensation of fate. In Greek mythology, we come across the powerful goddess called Nemesis. The Calvinistic doctrine of predetermination with its analogue in Islamic theology leaves

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1. Dīgha Nikāya—

Trans. Dr. Belvalkar and Prof. Ranade-P. 457; Inscriptions of Asoka–Sircar–P. 62.

little room for the amelioration of the unhappy conditions of life. Even in the Upaniṣads, we come across passages which make God responsible for the good and bad actions of an individual. In the Gītā, Lord Kṛṣṇa says : God is seated in the innermost recesses of the heart of living beings and turns them like so many automata mounted on a machine (Īsvaraḥ sarva bhūtānām......... yantraḥ). These views savour of absolute determinism. Commentators such as Śaṁkara struggled with these texts and appealed to contradictory statements found in the same work and drew forth implications which make room for determinism consistent with moral freedom. In the Mahābhārata also, we find passages which relegate the influence of Kāla (time) to a very insignificant position. In one place, the question is raised : is time the sole arbiter of human affairs ? Is it responsible for Kings and Governments or the latter, the master of time ? The answer is given that the King is the master of time. The King here stands for the state. The good King can initiate the golden age or Tretā or Dvāpara or Kali ; the first typifying the predominance of virtue, the last that of vice and the two intermediate ages progressive deterioration. Here the palm of victory is given to human exertion.

It must, however, be acknowledged that we may succeed in approaching the truth by striking the middle path between the two extremes. An age of perfect happiness embodying the triumph of virtue and justice over the seamy side of life is the utopia of noble minds. At any rate whether in mythology or in history, such a golden age has been a transitory phase. Human life consists of good and evil forms, sometimes one getting the better with the other in alternation. Even our heroic efforts fail to achieve the objective. This constitutes the tragedy of history. The failure of Hitler and Mussolini and the success of Stalin, philosophically considered cannot be regarded as the result of the moral law ending in justice. If we scan the major events of history, it is extremely difficult to

draw a conclusion either way. The tragic end of the Pāṇḍavas and Yadu clan headed by lord Kṛṣṇa cannot be adjudged without sophistication as the outcome of the operation of the moral law and justice.

Thus if we approach the question without any prepossession either for or against, it is very difficult to apportion the field of moral freedom and necessity. It is plausible to hope that the law will be vindicated in the next world. But this seems to be the argument of despair. The Christian believers have hoped for the advent of millenium during their life time, but circumstances have compelled them to defer this happy consummation to an indefinite future date which is, however, receding further and further onward. The problem of determinism versus moral freedom is ever green. It has not yet been possible to arrive at a unanimity.

In spite of all odds it must, however, be acknowledged that we cannot plump for determinism or freedom without reservation. Man is born under conditions over which he has no control or his choice was not consulted. But by education, discipline and strong resolve, men have achieved wonders. The discoveries of science and the consequent improvement in the living conditions of progressive nations are cases in point. The failures of best minds have not been entirely unqualified. They failed because the conditions and circumstances in other countries were not amenable to their control. At any rate, man has innate belief in his capacity for changing his life for the better. Though dependent on circumstances, a man can effect appreciable improvement in his economic, intellectual and moral conditions by self-exertion. In spiritual life, the scope of personal exertion under the guidance of a competent master is not at all inconsiderable. The triumph of justice over injustice is instinctively an article of faith with many a noble soul.[1] The failures of the past need not be an evidence of

1. Soeva sādhu karyanti.........Upaniṣad.

the proposition that the world is rotten to the core and is incorrigible. Sankarāchārya in his commentary on the Gītā[1] makes certain opposite observations on the scope of freedom against the deterministic influence of past Karma. It has been stated that a man follows the lead of his natural disposition (Prakṛti) under duress and no amount of coercion will be able to deflect him from the course. Again in the same very context Lord Srī Kṛṣṇa lays down the injunction—"Love and hatred, attachment and aversion are definitely attached to the several sense-objects. One ought not succumb to their influence because both are inimical to his wellbeing." There is apparently a contradiction between the two assertions. If the former statement relates to an irreversible state of things, all moral injunctions positive or negative are absolutely unavailing. But in the next statement, God forbids an aspirant after spiritual well being to resist the influence of love and hate. How can these two apparently incompatible statements be reconciled ? Śaṁkara propounds the solution in this way. The facts of experience are apt to excite our love or to provoke hatred according as they are pleasurable or painful. A man has got the power to subdue his feelings whatever may happen. Here lies the scope of freedom. One can control one's passions, however desperate or provocative may be the situation. Furthermore in the description of a perfect man who has won his freedom from the bondage of animal instincts, it is said—"His mind does not yield to dejection in the midst of sorrow and in happiness it is freed from desire and craving. He has conquered his greed, fear and anger". It may be the case that an individual may not be able to change the course of events and to adapt it to his advantage but he can refuse to be overwhelmed by the circumstances.

If we probe the question a bit more closely and deeply, it must be obvious that even the uncompromising advocate of

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1. Indriyasīndriyārthā.

passivity like Gosāla makes a call on the action or inaction of an individual when he asserts that all actions and exertions are futile and wisdom lies in desisting from all endeavours to better the conditions around him, he unconsciously calls upon an individual to refrain from fighting against the wind-mill in Don-Quixotic fashion. Even a negative attitude of forbearance and self-restrain presupposes an act of will. If every event, psychical and physical, be irrevocably determined by blind fate, there will be no occasion for offering moral advice either by way of affirmation or negation. Moreover, the question of right or wrong cannot be brushed aside. The state has established law course to administer justice. If absolute determinism is ruling principle in the moral plane, there is no *raison d'etre* for punishment and reward.

We instinctively believe that a man ought not to have done, what he has done and ought to have done, what he has not done. 'Oughtness' involves the question of obligability as has been shown by Dr. C. D. Broad. So far, we have discussed the question from the standpoint of the individual. A particular individual may feel powerless before a hostile environment. But a nation or a state can effect appreciable change. The improvements in the conditions of life effected in the civilized nations by the application of science and technology are a pointer. Amenities and comforts which were beyond the dream of our ancestors have been made available even to an humble individual. But the grand achievement of man lies in his self-conquest. Science has placed enormous power in the hands of nations for doing good or evil, and it ultimately depends on the moral advancement of human beings whether judicious or injudicious use of it will be made. It is true that men, who are placed in position or power for doing good or evil, are found to be self-centred and bent upon promoting their own interest or that of their relations or supporters. Under these conditions, worthy men do not get their deserts and bad men rule the roast. But this is feasible in a country where the people are

backward in education and are accustomed to tyranny. With the awakening of the moral sense and self-confidence and sense of justice, this state of things will come to an end. History records many such instances. Though it may not be a practicable theorem and perfect justice and the kingdom of heaven may be a far off event, it is not theoretically an absurd dream. Indian Ethics has laid enormous emphasis upon the individual moral upliftment. Though it may have erred on it by extremism the principle is sound in score. We must pursue science and Ethics in a balanced harmony and must learn to essay the value of extremistic utterances particularly those which harp on the imbecility of man before an unkind fate. As we have shown, even the rankest determinist unconsciously banks upon the capacity for true choice on the part of their clientele.

The Concept of Space

The twin aspect of time is space. It is comprehended, though in itself it is incomprehensîble. It is an enigmatic sort of stuff attributed with contradictory qualities such as limited and unlimited, conditioned and unconditioned, finite and infinite. In a way, it is the subsratum of opposites. Abstract space is an absolute entity. Absolute space is boundless. Such space permeates everything even the void. It is the "all enclosing bag." God himself is absolute space and these Lokas have come out of this space by apparent transformation. (Yoga 55.47) Out of absolute space; the concrete space called the worlds has come out. This concrete space is limited and conditioned. It is divisible also. Concrete space makes possible the extension of material objects. Ākāśa literally means that which gives space. At first, Mahat, the subtle element divides itself and pervades the whole space. After that, matter tends towards becoming grosser in the lower worlds. Sri K. N. Aiyar comments—"It is sighificant that Brahmā comes from Bṛh, to expand, while Vishṇu comes from Viṣ, to pervade. After Brahmā, the creator has expanded himself with matter in the

conditioned state : Vishṇu begins to pervade it as the cementer of particles through his prāṇa hence is called sustainer. The third figure of the trinity is the destroyer."[1]

The Purāṇas have posited three worlds keeping in view the three aspects of the ultimate principle. They are Brahma Loka, Vaikuṇṭha and Kailāsa. Seven Lokas are the manifest forms of these three primordial worlds.

Lokas

A detailed description of these Lokas has been given in the Visṇu Purāṇa, Vāyu Purāṇa, Śiva Purāṇa and Kūrma Purāṇa etc.[2] They hold that these seven Lokas have emerged out of the three primeval Lokas viz. Brahma, Vaikuṇṭha and Kailāsa. These Lokas are not separated in water-tight compartments rather they interpenetrate one another but at the same time they extend beyond one another. From the spatial standpoint, they are not higher to one another. Their grades are determined by subtleness and grossness of matter. The grosser the matter, the lower the worlds are. The concept of Lokas can fairly be illustrated by the following verse of the Viṣṇu Purāṇa.[3]

Dhruvādurdhvam Maharloka yatra te Kalpavāsinaḥ.
Ekayojanakoṭistu yatra te Kalpavāsinaḥ.
Dve koṭi tu Janoloko yatra te Brahmanaḥ sutāḥ.
Sanandanādyāḥ prathitā Maitreyāmalcetsaḥ.
Caturguṇottare cordhvaṁ Janalokāttapaḥ sthitam.
Vairāja yatra te devāḥ sthitā Dāhavivarjitāḥ.
Ṣaḍguṇena Tapolokātsatyaloko virājate.

In the above verse, the extent of the three higher worlds has been described thus : "At a distance of ten million yojanas above Dhruva situates Maharloka. The inhabitants of this

1. The Purāṇa–Sri K. N. Aiyar.–P. 71.
2. Kū (c)–Chapt. 44; Vi–II 7.16.–20.
3. Vi–II. 7.12.–20.

Loka live for a Kalpa or a day of Brahmā. At twice this distance is the region of Janaloka where Sanandana and other sons of Brahmā reside. At four times the distance above Janaloka lies Tapoloka, inhabited by Vairājas who cannot be consumed by fire. At six times the distance, situates Satya Loka (Brahma loka), the inhabitants of this loka are immortal." Similar views have been subscribed by the Brahmāṇḍa Purāṇa and Vāyu Purāṇa.[1] In the same Purāṇa, the position and the extent of the three lower worlds have been described thus : "Of the three worlds, Bhuḥ, Bhuvaḥ and Svaḥ, the terrestrial earth which can be treaded by foot, forms the part of Bhurloka. The sphere which extends from Bhuḥ to the Sun, where Siddhas and Munis reside, is Bhuvarloka. The distance between the Sun and the Dhruva extendidg fourteen hundred thousand yojanas is Suvarloka. These lokas are called Kṛta (transitory) whereas the three higher worlds namely Jana, Tapa and Satya are Akṛta (unmade or permanent). Maharloka stands between the two regions hence it shares the nature of both the categories of Lokas i.e. the Maharloka is Akṛta and Kṛta. At the end of Kalpa, Maharloka is deprived of all beings yet it is not fully destroyed".[2] Regarding concept of Lokas, the three following points may be noted :

(a) From the above analysis, it is clear that the Paurāṇic writers are fully acquainted with the heliometric and the Geometric standpoints. They described lokas in the light of the two.

(b) It has been clearly stated that the three lower worlds are transitory (Kṛta) and the three higher worlds are permanent (Akṛta). The Maharloka shares the nature of both.

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1. Bd-I. 7. 23 and 24;
   Ibid-I. 5. 115; Vā-7.37 and 8.24.
2. Vi-II. 7. 12-20 (quoted)

(c) As we descend to the lower worlds, the matter becomes grosser and grosser. The most crude form is found in the lowest world.

The Presiding Authorities of the Seven Lokas

The highest subplace of Brahma Loka is inhabited either by Brahmā or Manu. When Manu is named as presiding authority, the same Loka is known as Satya Loka. This presiding deity is the omnipotent force of creation.

Manu's sons preside over the second world viz. Tapoloka. They are named as Vairājas or the sons of Virāja or Manu. They are the embodiment of Jīvātmans. They are said to be engaged in performing penance hence the Loka is so named.

The third world is Janaloka. It is the dwelling Place of human beings or Jana. The Kumaras, Sanak and other Munis reside in this sphere. The Munis are considered to be free from humanly passions. In pursuance of the order of Rudra, these Kumaras have to inhabit this sphere.

The fourth world is Maharloka. The presiding lords are Ṛṣis. These Ṛṣis are such persons who should be worshipped both by men and the Devas.

Then we come to the fifth world or the first lower world. It is known as Suvarloka and is inhabited by Devas and others. Their number is said to be 33 *crores*.

The third lower world viz. Bhurloka depends for its existence on Bhuvarloka. The Bhuvarloka is inhabited by Rahu, Ketu, Siddhas etc.

Talas and their presiding authorities

Like seven lokas, the Purāṇas presuppose seven Talas also. The Talas have been variously named in the Purāṇas. The Viṣṇu Purāṇa names them as follows :

Atala, Vitala, Nitala, Gabhistimān, Mahātala, Sutala and Pātāla.[1]

The Bhāgavata Purāṇa furnishes an authoritative nomenclature which stands as :

Atala, Vitala, Sutala, Talātala, Mahātala, Rasātala and Pātāla.[2]

There is correspondence of each Tala with a particular Loka. Pātāla corresponds to Bhurloka and other Talas to other Lokas in respective order. A detailed description of these Talas has been given in Bhāgavata Purāṇa.[3] Underneath the earth, there are seven cavities. Each is separated by ten thousand yojanas and their length and breadth are ten thousand yojanas each.

In these regions below the earth are dwellings, gardens, sporting fields and pleasure resorts even more charming than heaven itself, overflooded with enjoyment, wealth, delight, offspring and affluence. There Daityas, Dānavas and Nāgas inhabit. They along with their friends and relations pass their lives in enjoyments and merriments. Big mansions have been constructed by the Dānavas by their Māyā power. Different varieties of flora and fauna are found there. That sun does not shine there hence the divisions of time do not prevail. Consequently creatures of that region do not fear even Kāla.

The presiding authority of Atala is Vala, the son of Māyā Dānava. He is famous for his Māyā power.

Beneath the aforesaid region is Vitala. The presiding lord of Vitala loka is Mahādeva himself, who resides with his

1. Vi–II. 5.2.

2. Bhg. V. 24. 7.

Vistāreṇopaklṛptā
Atalaṁ Vitalaṁ Sutalaṁ Talātalaṁ
Mahātalaṁ Rasātalaṁ Pātālmiti.

3. Bhg.–V, 24. 7–31.

courtiers there. He is also with his consort Bhavānī to further the cause of Procreation.

Beneath the above menioned region is Sutala. This region is the abode of illustrious and pious Vali, the son of Virocana.

Under the region of Sutala, is the region of Talātala. The presiding authority of this region is Maya Dānava himself.

Under the above mentioned region, lies the region known as Mahātala where innumerable hooded offsprings of Kadru reside. Among these serpents, the Kuhkas, the Kaliyas, the Susenas are principal ones.

Under the above mentioned region, is the region known as Rasālata. Here Daityas and Dānavas named Paṇi reside. They are on inimical terms with the Devas. They are chivalrous from their very infancy. But their pride of power has been vanquished by the Devas.

Below Rasātala is Pātāla. Here the great serpent Vāsuki along with some other serpents reside. The gloom prevailing in the nether regions is dispelled by the radiance of the gems adorning their hoods.

These Purāṇas have mostly dealt with the finite space which can be divided into regions. The description of the Lokas and Talas subscribe to the fact.

The seven Talas are the divisions of the second plane, the first plane being the Lokas.

It has been shown in the Viṣṇu Purāṇa [1] that the process of dissolution begins with the decaying of Lokas and Talas by drought, fire and water.

The term 'Trailokya' is sometimes used in proverbs. Trailokyanātha or Trailokya is an epithet for Indra. [2] But at first it referred to the three worlds of Gods, Asuras and men. The

1. Vi–VI. 13. 41.

2. MB–7.62. 1 & 7.5.11.

'phrase' was later on interchanged with 'seven worlds,' [1] The epics have not clearly stated whether these worlds are supported on earth or on water. Śiva is identified with these seven worlds which he himself creates. [2] These worlds are also personified as sentient beings. [3] As at one place in the Rāmāyaṇa it is said that these worlds saw Sītā entering fire. By these worlds, the gods, the Gandharvas and Dānavas are meant. It seems that Paurāṇic concept of worlds has not affected the epic concept. In the Rāmāyaṇa, a peculiar concept of worlds as wind paths has been given. [4] The first world is said to be the abode of Hamsa, the second that of the clouds, the third that of saints and singers, the fourth that of pious beings, the fifth that of Ākāśa Gaṅgā, Nāgas and elephants, the sixth that of Garuda, the seventh that of the Sun, planets and stars and finally the world of moon. [5]

The two epics do not describe explicitly the Paurāṇic concept of Pātālas. They simply describe Rasātala which is one of the seven under worlds. But at one place in the Mahābhārata, some familiarity with these worlds has been shown, [6]

It clearly speaks about seven worlds under the earth. Pātāla as Rasātala is a watery under world where Vāsuki resides. Later on this region is identified with hell.

Space has been described in Utpatti-Prakaraṇa of the Yogavāsiṣṭhaḥ in 17 sarga.

Lilā wanted to know the whereabouts of her husband. The Goddess replied there are three forms of space, namely :—

1. Cittākāśa or space full of desires.
2. Cidākāśa or spirtual space.

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1. MB-3.3. 45-Sapta Lokāḥ.
2. ibid.—13. 16. 34.
3. R—6. 101. 56.
4. R—6. 117. 31 & 120. 24.
5. ibid—7. 24. 4.
6. MB-5. 102. 11.

3. Ākāśa or physical space.

The Goddess pointed out that her husband was in the spiritual region. By deep concentration, that region could be seen easily. Līlā fell into trance and reached the region of her husband where he was ruling as king Vidurath. Then Lilā again acquired her original state and saw the dead body of her husband lying. Līlā begged the Goddess to throw light on the true world and the false world. The Goddess said, "the new world seen by you cannot exist without a cause. The old world is the cause. The new creation has been formed by the impressions of the old, your anxiety to have your husband alone has been the cause of the creation of the new world, This present creation is also false ; it looks true and beautiful by external environments. "

Further the Goddess explained that in the sphere of self, there was a space. In one corner, there was a village where a priest performing the daily penance lived. His name was Vasiṣṭha. He had an ardent desire to become a king in the next life. His wife also wanted to be with him. After some time, the Brahmin died. He stayed in the etherial space. Due to the desires of the previous birth, the Brahmin assumed the form of King Vidurath who was the husband of Līlā in the present birth. Līlā was no other than Arundhati, the wife of the Brahmin. This present illusion was the reflection of the previous illusory creation.

Further the goddess said that in the spiritual region, there is no definite span of space. Thus space is unlimited.

The Bhagvadgītā has described space as all-pervasive. All manifest objects inhere in it, [1] All is immersed in it and yet being the subtlest of all, while it affects everything, nothing affects it in return.

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1. Gītā–XIII. 32.–Yathā sarva gataṁ saukṣmayādākāśaṁ nopalipyate
X. 6–Yathākāśasthito nityaṁ Vāyuḥ sarvatrago mahān
Tathā sarvāṇi bhūtāni matsthānityu padhāraya.

The relative aspect of space is also discussed in the Gītā. The following incident will illustrate.

The incident is given in the eleventh chapter of the Gītā. On the request of Arjuna, Kṛṣṇa showed his cosmic form i. e. Viśvarūpa. Arjuna was bewildered to see that form. Kṛṣṇa endowed him with supernatural power of observation as it was difficult to see that form with ordinary eyes. Ārjuna saw many worlds in that form at a time. This clearly speaks of the relativity of space and time.

The concept of space as described in the Purāṇas, upapurāṇas and epics mostly refers to the conditioned space. The extent and divisions of Lokas and Pātālas support the above contention. However, the primeval worlds viz. Brahma, Vaikuntha and Kailasa vaguely refer to absolute space which is unlimited and unconditioned. The concept of space as depicted by these texts cannot fairly be compared with the modern concept of space.

CHAPTER IV

Thc Concepts of Space and Time in the Buddhist and Jaina Thought

PART—A

The Indian School of Buddhism is divided into two broad groups, viz. Hīnyāna and Mahāyāna. Mahāyānīsts innovated such nomenclatures in order to prove their superiority over the other. There are two main schools of Hīnyāna : Vaibhāṣika and Sautrāntika. Likewise there are two main schools under Mahāyāna also : Yogācāra and Mādhyamika or Śūnyavāda.

The Sarvāstivāda is one of the oldest schools of Buddhism. The doctrine of this school has been fully developed into a system under the Vaibhāṣika system.

Time comes under the category of Saṁskṛta Dharmas according to Vaibhāṣikas. While describing Samskṛta Dharmas four synonyms, viz. Adhvā, Kathāvastu, Saniḥsāra and Savastuka have been used. Adhvā means that constituted objects are subject to time. Kathāvastu refers to past, present and future which are applicable to composite objects, Saniḥsāra means that all constituted objects are subject to disappearance. Savastuka means that constituted objects are conditioned by causes. Out of the past deeds, fresh existence arises. [1]

Vasubandhu, in his authoritative work Abhidharma Kośa, [2] says that because one asserts the existence of things in three

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1. Sphooṭārthā—I. 7-Te Punaḥ Saṁskṛta Dharmā; rūpādiskandha-pañcakam.
   Te evādhvā Kathāvastu Saniḥsāra Savastukāh.
2. Abhidharma—V25 - 26 (Caturvidhāḥ ete. Bhāva - lakṣaṇā-Vasthā - nyathā nyathikāhvayāh). Tṛtiyaḥ Sobhanoādhvānaḥ Kāritrena Vyavasthitāḥ).

times, past, present and future, one is named as Sarvāstivādin. Sarvāstivādins emphatically assert the existence of past, present and future.

The Sarvāstivādins uphold the three divisions of time on the following grounds :—

(a) The first argument is based on scriptural sayings. Buddha has said in Saṁyuktāgama [1] that Rūpa is non-eternal. Further he has asked the Śrāvakas to remain unconcerned with the past rūpa, the present rūpa and the future rūpa. The Sarvāstivādins hold that, if the past rūpa does not exist there is no need of giving any warning to Śrāvakas to remain unconcerned with the past rūpa. The same argument applies to present and future also.

(b) The next interpretation points out that every Vijñāna is produced out of two causes—sense organ and sense object (rūpa). If there are no past and future objects, the mental consciousness of those objects will be impossible. [2]

(c) If an ālambana (object) is there, then and there alone vijñāna is possible. This necessitates a belief in past and future times.

(d) If the past does not exist, how can past act, good or bad, produce any result ? When the effect is produced, the cause (Vipāka-hetu) becomes defunct and the thing of the past, because it does not produce the same effect again. [3]

Thus the Vaibhāṣika establishes the existence of entities in three divisions of time. Here a pertinent question arises as to

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1. Samyuktagama-III 14. Rūpamanityamatītamanāgatam.
2. Samyuktagama - III. 32; (Sphooṭārthā-Na dvayaṁ Pratitya Manovijñānam Syāt ; yadatītānāgatālamvanmiti viśeṣaḥ. Tato Vijñanameva Syāt Ālamvanābhāvāditi.
3. Sphootā—Vidyamāna-Svalakṣanam Śubhāśubhamatitaṁ Karma. Vipaktikāla Utpadyamānaphalatvāt. Varttamāna Dharmavaditi.

how can the Buddhists hold the continued existence of the entities in three divisions of time when it is asserted by all Buddhists that all existents are impermanent. Of course, the Vaibhāṣikas believe in three eternal entities or Asamskṛta Dharmas namely Ākāśa. Pratisṁkhyānirodha and Apratisaṁkhyānirodha. These entities are not subject to birth, decay and extinction. Besides these unchanging eternals, they affirm the existence of seventy two categories or dharmas in Aristotelian sense which though constantly undergoing change maintain their existence in all the three divisions of time. The Vaibhaṣikas admit, they are momentary and permanent at the same time. This assertion has provoked controversy and the Sautrāntikas, and so also Nāgārjuna have subjected them to relentless criticism. How can these two contradictorily opposite characters namely permanence and ceaseless change be reconciled in the one and the same entity ? In answer to this charge, four different theories have been propounded by four reputed Ācāryas (teachers) of Vaibhāṣika School. It is plausible that these Ācāryas (teachers) were the founders of different sub-schools. The views of these Ācāryas (teachers) are given below [1] :-

(a) Bhadanta Dharmatrāta—He is the advocate of the doctrine of difference of modes (Bhāvanyathātva). He says that when there is a change in anything, that change is only in modes, the substance is not affected at all. Gold is changed into different ornaments yet it remains gold in and through all these transitions. When a certain object renounces its future mode, it assumes present mode; and when it leaves present mode, it assumes past modes: yet the object remains the same throughout. The change is in the form only.

(b) Bhadant Ghoṣaka says that changes undergone by objects are in its distinguishing character (Laksaṇa). He argues that though past is attributed with the specialities of past

1. T. S.-Sir Ganga Nath *Jha*-XXI.

yet it does not renounce fully the characteristics of present and future. Likewise, future also retains the characteristics of past and present. For instance, a person attached to one lady, may maintain relations with other ladies also. Thus he emphasises that the notions of three divisions of time are simultaneously present in an object.

(c) Bhadanta Vasumitra is a staunch champion of the theory of Avasthānyathika. In other words, he maintains that the changes undergone by the objects take place in their states (Avasthā). The same figure is one or hundred or thousand according to the change of positions of states. Similarly, when a thing is in the state of activity (Kāritra), it is present. when it has ceased from action, it is past and when it is not active at all, it is future. So the things are spoken of according to their different states though there is no change in the thing itself.

(d) The doctrine of Anyathā-anyathika is held by Bhadanta Buddhadeva. He holds that changes are due to changes in relation (anyathānyathika). He argues that an object is called one or other in relation to what has gone before or what is to come. For example, the same woman is called daughter, wife and mother, and according to changing contexts when something precedes and something suceeeds, it is the present. When there is no preceding factor, there is a succeeding factor, it is past. When there is a preceding factor but there is no succeeding factor, it is future.

In his Abhidharmakośabhāṣya, Vasubandhu has criticised the theories propounded by three teachers namely Bhadanta Dharmatrāta, Bhadanta Ghoṣaka and Bhadanta Buddhadeva and has accepted the theory of Vasumitra though he is not fully satisfied with his theory also. Bhadanta Dharmatrāta is said to have walked into the spider's parlour. In other words, he has accepted the Sāṁkhya doctrine by asserting the reality of change. According to his theory, the present becomes

the past and the future becomes the present. But do the future and the present or the present and the past coincide ? If in the transition from one temporal state to another, there is no renunciation of the previous states, they will coalesce. The future, the present and the past will be heaped together in one whole and this will obliterate the distinction altogether. If the previous mode is supposed to lapse, the central doctrine of universal existence collapses.

The doctrine of Bhadanta Ghoṣaka does not safeguard the position of the Sarvāstivādins. Are the characteristics 'pastness', 'presentness' and 'futureness' numerically identical with or different from the entity ? In the former case, the confusion of characteristics is bound to arise. In the latter case, the characteristics will not qualify the entity and will hang in vacuum with no support to stay on. The illustration of a person attached to one lady and at the same time maintaining relations with other ladies also is a complete hoax. The attachment to one is not incompatible with that to the others but pastness is obviously inconsistent with presentness and futurity. The past man or thing must be different from the present, and the doctrine of universal existence amidst change is untenable and utterly absurd.

The fourth theory of Bhadanta Buddhadeva has made these temporal characteristics relative to temporal divisions. But he has not pointed out how the past becomes different from the present or the future. The definitions of past or present or future do not overcome the confusion. The future becomes present and the present becomes past. If these characteristics are always present, the confusion cannot be removed, but if they are supposed to be non-existent in one position or the other, the doctrine of universal existence will collapse. The difficulty lies in the dynamic nature of time itself in relation to which the different changes are explained by Buddhadeva. It seems Buddhadeva has failed to visualise this nature of time.

The example of the same woman being mother or daughter is not mutually opposite. The terms of reference are fixed and they cannot coalesce. It is not the case with temporal determinations, here time itself is absolutely dynamic hence the temporal determinations are found to be affected.

The third theory of Vasumitra, which is based on causal efficiency (Kāritra), is acceptable to Vasubandhu. According to his theory, the past and the future are said to be divested of the causal efficiency. Only the present is capable of exercising this efficiency. This theory makes possible the demarcation between the present and the past or the future. We shall show that this theory also does not solve the problem. The causal efficiency (Kāritra) would either be identical with the entity or not. If it were an external determination, somehow attached to it, it would make the entity present and existent, but would make it a non-entity in the past and future, for causal efficiency is the criterion of existence. If on the other hand, causal efficiency were to be present in all the divisions of time, it would obliterate the distinction between the past and the present and vice versa. Sarvāstivādins hold that an entity continues to exist for all times but at the same time assert that it exercises causal efficiency only in the present. This position is self-contradictory. It amounts to saying that it is both existent and non-existent.

Though names of reputed teachers of Buddhism have been associated with the interpretation of changes given above, it seems that it is a borrowing from the Sāṁkhya-yoga doctrine of Pariṇāma. It is now universally admitted that Sāṁkhya-yoga system preceded Buddhism in time and also it must have influenced Buddha's philosophical ideas and spiritual discipline. Buddha became the disciple of two Sāṁkhya teachers namely Adara Kalan and Rudrak Rāmaputra. The fundamental doctrine of the dynamic conception of things was most likely borrowed from Sāṁkhya view of matter.

Prof. R. Pischel holds : "theoritical Buddhism reposes entirely on Sāṁkhya-yoga," ..."it has borrowed from Sāṁkhya-yoga almost everything." H. Oldenberg admits in modifed form the contention stated above. He says : "We have ample right to call Sāṁkhya that doctrine which appears as the remote, if not the nearest, background of the fundamental ideas of Buddhism". Prof. R. Garbe and M. E. Senart admit still greater influence of Sāṁkhya-yoga on Buddhism. M. E. Senart however, is of the opinion that Buddhism is more dependent on yoga. [1] The opinions expressed by authorities quoted above give us reasonable ground to hold that the doctrine of Pariṇāma (change) as maintained by reputed Buddhist teachers has also been borrowed from Sāṁkhya-yoga.

The nature of Pariṇāma (change) is clearly stated in yoga-Bhāṣya, III-13 : "Tatra Vyutthānanirodhayoḥ Abhinavaprādurbhāvam dharmiṇi dharmapariṇāmaḥ. Lakṣaṇapariṇāmo nirodhastrilakṣaṇaḥ tribhiradhvabhiryuktaḥ. Sa khalu anāgatlakṣaṇamadhvānaṁ hitvā dharmatryamanatikrānto. Vartamānalakṣaṇam pratipannaḥ yatrāsya swarupeṇa abhivyaktiḥ...Nirodha Kṣaṇeṣu nirodha saṁskāra Babvanto bhavanti, durbalā vyutthānasamskārāḥ, ityevam dharmāṇāmavasthāpariṇāmaḥ." Thus according to Sāṁkhya-yoga the change of appearanc is the Dharma Pariṇāma. Lakṣaṇa Pariṇāma and Avasthā Pariṇāma are intrinsically identical with Dharma pariṇāma but they are separately mentioned as they possess certain distinguishing characteristics. Due to Lakṣaṇa Pariṇāma certain thing comes into being and dies away. Though birth or death also is contained in the change of appearance yet on account of its special characteristic, it has been given a separate name as Lakṣaṇa-Pariṇāma. This Pariṇāma takes into account the three aspects of an appearance, viz. the unmanifested (of the future), the manifested (of the present) and manifested which is lost but conserved (of the past). Avasthā-Pariṇāma

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1. As quoted in Indian Historical quaterly—PP. 753-754.

is considered as the mode of Lakṣaṇa-Pariṇāma. Due to this Pariṇāma (change), a substance is said to be new or old.

The description of the doctrine of change (Pariṇāma) as given above clearly proves that Buddhism has borrowed it from Sāṁkhya-yoga.

Vasubandhu, in course of time developed a soft corner for Sautrāntikas and championed their standpoint. A detailed discussion leading to the victory of Sautrantikas has been shown in Abdidharma-Kośa itself.[1] Certain explanations are given in Yasomitra's commentary and the Tibetan commentary of Mchims-pa, which is the standard work on Abhidharma in Mongolia and Tibet.[2]

The Sautrāntikās critically examine the arguments advanced by the Vaibhaṣikas for accepting the realities of three times viz. the past, the present and the future. An examination of these arguments from the Sautrāntika standpoint is given below :—

(a) The Sautrāntika holds that ·the first argument of the Vaibhaṣikas, which is based on scriptural sayings, should be judged by its context. The assertion of our sublime lord, "there is a past, there is a future" should be understood in another sense. While the sublime lord was in discussion with the Ajivikas (who denied moral responsibility for past deeds), he asserted the existence of past and future also. He strongly disparaged the doctrine of the Ajivikas which denied any connection between past deeds and future result. He categorically asserted the existence of past and future, in order to make it known that a former cause and a future result are something which happened formerly and will happen in future. The word 'is' occurring in the above assertion should be taken as particle (which may ·refer to something existent and also to

1, Abhidharma-V-24-26.

2. Translated by Th. Stcherbatsky in the book. "The central conception of Buddhism.

something non-existent). For intance, people may say : "there is absence of light" (before it has been kindled), "there is absence of light" (after it has been put out). When Buddha declared 'there is a past, there is a future', he used the word 'is' in that sense. 'Is' is here not a predicate but is more like a copula without any existential import.

(b) The second argument, which maintains that Vijñāna is produced by two causes, viz. sense organs and sense objects, is also disparaged. The Sautrāntikas distinguish between mental object and sensuous object. They hold that the 'object' referred to above is not an active cause like the intellect. If it is taken as active cause then it will mean that events happening after a thousand aeons will constitute an active cause of corresponding cognition. But this position is absurd. If it is mere passive object of operating mind, then it can be maintained that they may be both future and past. Congnition reposes on two factors : a perceptive faculty and a corresponding object. Is this object a real cause in the same sense as the intellect ? Or is it passive object realized by the intellect ? If it were a real active cause, how could events which must happen after the lapse of a thousand aeons, or those which will never happen possibly constitute an active cause of the correspounding cognition ? And the Final Deliverance, Nirvāṇa which is synonymous with the total causation of every operation of all the elements of existence, how can it constitute a really active cause of its own conception ? But if on the other hand, such objects are mere passive objects of the operating mind, then we maintain that they may be future and may be past. Vaibhāṣika raises an objection: if they (objects) do not exist, how can they possibly be objects ? To this Sautrāntikas reply that their existence is admitted in the very form in which they are conceived at the present moment in the present place. In reply to another question as to how they are conceived as past and future, the Sautrantikas say that when somebody remembers a past object or a

former feeling, he has never been observed to say "it exists", but only "it did exist". They are existent only in the form in which they are conceived by us at the present time and at the present place. When somebody remembers a past object, he never ssys 'it exists', but only, 'it did exist'.

(c) The Sautrāntikas challenge the third argument also which maintains that Ālambana is necessary for the production of Vijñāna (cognition). As sense objects, the past ones are remembered in that very form in which they were experienced when they were present, and the future ones are known to Buddhas just in that form .in which they will be present. Thus to maintain the existence of past and future is futile. Both existence and non-existence may be objects of mental conception with apparent objective reference but this should not be construed as an objectively existent fact. It is what is called Vikalpa or Kalpanā in Diṅnāga's epistemology. This Vikalpa is nothing but pure ideation which has been defined as the objective cognition in Yoga-Sūtra. It is a purely subjective conception like that of a 'Square Circle' or a barren woman's son. (Sabdajñāna anupāti Vastuśūnyoḥ Vikalpaḥ)

(d) As to the fourth argument (in favour of the real existence of the past, viz. because it has real result), it can be said that the Sautrāntikas did never maintain that a result can be produced from a past deed (directly). 'This deed' is the beginning of the peculiar chain of events (in course of which the result is produced sooner or later).

From the above examination it is quite clear that the Sautrāntikas maintain that only the present exists. [1] It seems that Vasubandhu also endorsed the view of the Sautrāntika school.

There is one school named Vibhajyavādins by Vasubandhu which has attempted a reconciliation between these two rival schools of Sautrāntikas and Vaibhāṣikas. This school admits

1. Cf. Madhyamika, Vṛtti – Sautrāntikamate, atitānāgatam śūnyamanyadaśūnyam.

the reality of the present facts and of that part of the past ones which has not already lost its force but it 'denies the reality of the future ones and of that past ones which has lost its force. [1] This school is known as Kassyapiyas in Kathāvastu. [2]

On the basis of Viṁśatikā of Vasubandhu, the yogācāra standpoint regarding space and time can fairly be known. Vasubandhu also embraced this system of thought. Viṁśatikā is one of the important texts of this school.

According to this school, there is no reality aloof and apart from consciousness. The objects which appear as the substrata of consciousness are absolutely unreal. [3] The whole world of appearance does not enjoy better status than that of hallucination of a man of tainted vision.

The realists point out that if consciousness is to be regarded as the only reality, no rational explanation can be given for Spatio-temporal determination. This determination always presupposes experienced objects. Experience is found to occur in a particular space and not everywhere and in that space also it occurs at a particular time and not for all times. Thus the reduction of all objects to hallucinations will involve insoluble difficulties. [4]

The Yogacarins hold that Spatio-temporal determination can be explained on rational grounds. This determination does not require at all any objective reality. They illustrate it on the analogy of dream experience. In dream though there are not any garden, women or men and the like existing in reality (independent of the dreams), yet these are experienced in a particular place and at a particular time. This clearly shows that

1. Abhidharma and also Bhāṣya-V. 24.
2. I. 8 (Kathāvattu)
3. Viṁśatikā-Verse I-Vijñapatimātramevaitadasadarihānbhāsanāt. Yathā Taimirikasyāsatkeśacandrādidarśanam.
4. Viṁśatikā-Verse II-Anarthā yadī vijñapatirniyamo Deśakālayoḥ.

Spatio-temporal determination can be conceived even if there is no objective reality.[1] Thus space and time are only ideal appearances.

Space and time perhaps are also conceived as uncaused, immutable and eternal by the Vaibhāṣikas. But the Mādhyamikas do not approve of this position. They hold that all things are related as cause and effect and an entity which is not related as such is non-existent. If the Vaibhāṣika contention is admitted, then space and time, which are uncaused, will become non-entities. "There is no existence anywhere which is not dependent. The permanent entity does not exist in reality anywhere".[2]

Space and time have no objective existence even from the empirical standpoint.[3] They are not the objects of perception as other objects such as chairs, tables etc. are. By force of habit, we posit objective existence to these two mental concepts.

Time is considered as an important factor which brings changes in the objects of the world. Time is also taken as all-pervasive and eternal as all objects are subject to time. Thus time is an ultimate cause. According to Mādhyamikas, there is sufficient reason to hold that time is not a cause. They adduce the following reasons in support of their contention :—

Firstly, time is supposed to be an unchangeable and uniform entity. If it is a cause, it will mean that under its influence, things such as seeds will incessantly produce certain effect, which really does not happen. At one time, the seed produces

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1. ibid-Verse III-Deśādiniyamaḥ siddhaḥ svapnavat.
2. CŚ-R. 2; MK-XXIV. 19-Apratītyāstitā nāsti kadācit Kasyacit Kvacit;- Na Kādācit 'Kvacit Kaścit vīdyate tena śāśvataḥ.
3. MK-IX. 5-Ākāśādiṁ Kalpānte Nityānīti Pṛthagjaneiḥ Laukikenāpi teṣvarthān na Paśyanti Vicakṣaṇāḥ.

effects and at another time, it does not. Time, as cause, will have to assume variable character. Thus it will be reduced to an impermanent entity as the seed itself.

Further an effect is the manifest form of cause. In other words, cause undergoes certain changes to produce an effect. The Seed perishes, then and there alone a sprout is brought forth. Likewise, time will have to modify itself to produce an effect, thus time as permanent and uncaused entity, cannot produce anything at all. If any permanent entity is apprehended as cause of another entity it will mean that the particular entity is produced at random, for the cause does not share at all in the production. [1] Cause and effect should have the same nature, as the effect is nothing but the cause transformed. Time is taken as eternal, consequently the effect produced by time should also be eternal. But it is never the case. Thus there exists a disparity between the cause and the effect. The above argument fairly proves that time as permanent and uncaused entity can never stand as cause.

Nāgārjuna attacks the reality of three divisions of time, viz. past, present and future as advocated by the Vaibhāṣikas. He holds that the existence of these three divisions of time is interdependent and relative. The existence of the present and the future depend on the past, so, they should exist in the past. [2] Thus they are included in the past. "If it is argued that the present and the future remain distinct and do not exist in the past; [3] a non-relative present or future is to be admitted and

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1. CŚ-IX. 10-Śāśvataṁ Kāraṇaṁ Yasya Bhavoabhūtvā sa jāyate
   Svamevodbhavastasya kāraṇam vinivartate.
2. MK-XIXI; CŚ-XI. I
   Pratyutpanno nāgataśca yady atītam apekṣya
   Pratyutpanno nāgataś ca kalo'tite bhaviṣyataḥ.
3. MK-XIIX. 2-
   Pratyutpannonāgatas' ca na stas tatra punar yadi,
   Pratyutpanno nāgatas ca syātāṁ katham apekṣyatam.

that is not possible; and without distinctions, time too is not available".[1] Similar arguments may be adduced regarding the existence of the past also.

The existence of time apart and aloof from the objects is inconceivable.[2] Time is always thought to exist in relation to changing objects. These changing objects themselves are unreal, consequently, time becomes unreal.

Besides these schools, we should mention certain texts which show a clear grasp of the concept of time.

Milinda-Pañha has elaborately discussed the concept of time.[3] In reply to queries made by Milinda, it is stated that by time, we should mean the past, the present and the future. Thus the conditioned aspect of time is discussed. It says that there is time which exists and the time which does not. Here time is inter-related with dispositions (Saṁskāra). There are certain dispositions which have passed away, ceased to be, dissolved and altogether changed. To them time is not. But there are some dispositions which are still producing certain effects or which have the potentiality to produce effect or which will otherwise lead to reindividuation. To them time is. There are beings who suffer from the cycle of rebirth, for them time is. There are Arhatas, who have attained Nirvāṇa, for them time is not. Thus Nirvāṇa is said to be a timeless state.

The root of the past, the present and the future is said to be ignorance. Thus time is associated with the chain of causation. The beginning of time can not be known. It is made clear by the analogy of seed; egg, hen, egg etc. It is finally suggested that there is constant continuity between the past and the present and the present passes over to the future.

Here it may be remarked that people generally regard

1. MK-XIX. 3
2. MK-XIX. 4.
3. Mil-2.2. 17-20.

time as progressing in a straight line from the infinite past through the present to the infinite future. Milinda-Panha regards time as a circle with no beginning or end. Time is relative. The wheel of life clearly suggests a representation of living being in relation to both space and time.

Kathāvattu has elaborately discussed the concept of time. But it does not give us any clear picture.

According to this text, time distinctions have no objective existence and reality is confined to the present[1]. The past reality is destroyed and the future reality has not yet come into being. 'Reality' and 'Present' refer to the same entity. They are interchangeable terms. "When it gives up its reality, it gives up being present; when it gives up being present, it ceases to be real".[2]

Further this text points out that objects in time are not constantly fixed.[3] Those who are ignorant of the true nature of reality, 'see only a continuous and static condition in these phenomena'.[4]

This text asserts the true momentariness of all consciousness on the one hand but on the other, it decries such theory.[5] It emphasises the existence of sense matter, viz. trees etc. on the basis of canonical text.[6] From the above contention, the conclusion may fairly be drawn that Kathāvattu admits consciousness to be momentary, but at the same time it does hold that material objects have some endurance, though they are not permanent. This view is in accordance with the canonical texts.

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1. KV-I. 6-8.
2. K.V. I. 6; 5.
3. K.V.I. 10.
4. Ledi sadaw's view.
5. K.V. II. 7.
6. M.N.I. 190.

The minor views regarding the concept of time as gleaned from Kathāvattu are summed up as follows :—

The Kassapikas of the Sabbattavādin group, does not fully agree with the tenets of the Vaibhāṣika school and maintains that "those past things of which the effect is not matured exist, those past things of which the effect is matured do not exist."

The Andhakas and Pubbaseliyas maintain that "all things exist in time, by way of material and other qualities, as past, present or future, but that there is no past is at once future and present, nor any future and present that are also past, and therefore, all exists only as thus, and not as thus".

The Concept of Space

Vasubandhu has divided Dharmas into Samskṛta and Asamskṛta according to Sarvāstivādins. Samskṛta Dharma is that 'which is made up of elements or parts' hence it is destructible and mutable also.[1] Asamskṛta Dharma is that which is not composed of elements or non-composite. It is unproduced, indestructible and immutable.[2] Ākāśa is one of the Asamskṛta Dharmas.

The chief nature of Ākāśa is freedom from obstruction (Anāvaraṇatva) of limitlessness. Due to this characteristic, it is known as permanent and all-pervasive substance. It does not obstruct any other thing and at the same time it is not obstructed by other elements also. Innumerable objects are produced and destroyed at a time in Ākāśa without bringing any change in Ākāśa itself. Vasubandhu says, "Non-obstructiveness is the very nature of Ākāśa and due to this characte-

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1. Abhidharma Kośa–IKā. 4. "Saṁskṛtā Mārgavarjitaḥ..."
2. ibid–I Kā 5—

"Anāśravā Mārgasatam Trividhaṁcāpisaṁskṛtam Ākāśam dvo nirodho ca."

ristic it provides room for material objects"[1]. There is no other Dharma which partakes the nature of freedom from obstruction, hence an instance cannot be given to prove the non-obstructiveness of Ākāśa.[2] Light and darkness are also non-obstructive in the sense that they do not obstruct other things but they are obstructed by other elements. Further they do not provide room for other elements as things exist both in light and darkness. Ākāśa should not be considered as void or non-existent, as Abhāva is a negative element. A negative element can never render possible the activity of other elements as Ākāśa does. Even if Abhāva is taken as a positive element (as in Sāṁkhya philosophy) it is never a Sapratiyogika (relative) element as Ākāśa is. Thus Ākāśa is not non-existential in nature. It is positive (Bhāvarūpa).

Śaṅkara in Śāṅkarabhāṣya on Brahmasūtra has criticised the concept of Ākāśa or space as held by Vaibhāṣikas on the following grounds[3]:—

(i) "You cannot call Ākāśa-Nirūpākhya as it is a Vastu or substance".

(ii) "To say that Ākāśa is nothing but the general absence of Āvaraṇa would hardly meet your case. Suppose one bird is flying. It would create an Āvaraṇa or covering of space, consequently a second bird cannot fly at the same time as there would be no space left for it to do so".

Buddhist objection.

"But the second bird may fly where there is no Āvaraṇa or a covering".

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1. Abhidharma Kośa-I. Kā 5-"Tatrākāśaṁ anāvṛtiḥ"
   Sphooṭārthā-I Kā 5-
   "Avakāśaṁ dadātityākāśamiti nirvacanam.
   Bhṛśamasyāntaḥkāśante Bhāvā Ityākāśamityapare."
2. Sphooṭārthā-I. 5-
   "Tadepratyakṣaviṣayatvādanyadharmanāvṛtyanumiyate."
3. Brahmasūtra (Bhāṣya)-II.2.24.

Answer.

"Your objection points out that Ākāśa is a real Vastu or entity, since it is that by which the absence of covering bodies is distinguished. In other words, it is space in the ordinary sense, and not, in your Buddhist sense, mere 'absence of covering bodies'. If you ask yourself what enables you to declare that there is absence of covering in one place and not in another, the answer will be "space" which, therefore, must be something real".

(iii) "With respect to his views regarding space, the Buddhist contradicts himself. For instance, in a Buddhist Sūtra, Buddha is represented as saying, "Air has for its basis Ākāśa" in answer to the question "what is the basis of air ?"[1] This saying of Buddha clearly admits that Ākāśa is a positive entity and not mere negation as the Buddhists maintain."

(iv) "Moreover, the Buddhist statement concerning the Asaṁskṛta dharmas is self-contradictory. They say they are Nirūpākhya (i. e. non-definable); in spite of their being so, they characterise them as eternal. Now when a thing is not a vastu or a reality, you can not speak of its being eternal or non-eternal, because contradiction of attributes entirely depends on a thing being real".

An examination of S'ankar's views.

(i) "The term Nirūpākhya is never used by the Buddhist while describing A-Saṁskṛta Dharmas. Even if it is a Buddhist epithet, it does not mean "undefinable" as Śaṁkara takes it to be. It simply means 'Nihsvarūpam' or devoid of form. Besides, the Sarvāstitvavādins regard Ākāśa as a positive element, all-pervasive and eternal. It is a vastu, if by Vastu is meant an entity but it is not a Vastu, if Vastu is taken as a material thing. According to Buddhists Ākāśa is immaterial. Thus Śankara has mis-understood the Buddhist technical term 'Nirūpākhya' or immaterial thing",

1. D.N. II. 107.

(ii) Āvaraṇa means 'obstruction', consequently 'Anāvaraṇa means freedom from obstruction. Śankara has misinterpreted this term also. He gives it a wrong sense viz. 'occupation of space', to prove his point that Ākāśa is a positive entity. Ākāśa is regarded as a positive entity even by Sarvāstivādins. Hence the charge levelled against the Sarvāstivādins does not stand at all.

(iii) The 'Sūtra' quoted by Śaṅkara in support of his contention, speaks about common sense view of 'sky' and not in the Philosophical sense of 'space'.

(iv) This charge is based on the misinterpretation of the Buddhist technical term 'Nirūpākhya' as already pointed out.

Ākāśa or space is regarded by the Sautrāntikas as mere conceptual form bereft of any objectivity. They do not posit any uncaused category and reduce the permanent and eternal element like Ākāśa of the Vaibhāṣikas to mere intellectual fictions. They have vehemently criticised the Vaibhāṣikas for regarding an uncaused fiction as an existential category. They point out that Ākāśa (space) is nothing but the absence of something tangible or resisting substance just as a man in darknesss says it is Ākāśa (vacuity or space) when he does not perceive anything tangible or resistible; likewise the Ākāśa of the Vaibhāṣika should be understood[1].

While replying to Uddyokatara, Kamalaśīla observes– "your statement, that uncaused categories are twofold, viz, eternal and non-existent, only shows your ignorance of the opponent's (Buddhist's) position, as the Buddhist rationalists (Sautrāntikas) hold uncaused categories as non-existent fictions.

Verily it has been said by the Master "The Boddhisattva

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1. Sphooṭārdhā–II. 55–Na rūpādibhyaḥ pañcabhyoḥ saṁskṛtaṁ bhāvāntaramasti.

Ato na saṁskṛtaṁ Dravāntaramiti Sautrāntikāḥ.

while reviewing the entire phenomenal world does not find a single phenomenon, which is exempt from the law of causation. As regards the Vaibhāṣikas who regard Ākāśa and the like as having objective existence, they are classed by us with the heretical schools and are not the true followers of Buddha (Śākyaputrīyāḥ)"[1]

Thus the Vaibhāṣika standpoint regarding the concept of space is condemned as rank heresy.

The Laṅkāvatāra Sūtra is considered to be one of the texts of Yogācāra school. The standpoint of Yogācāra school with respect to the concept of space can well be known on the basis of this text.

Those Philosophers, who do not know the real nature of space, discriminate between the separate existence of space and form. In reality, space is form. These two interpenetrate and cannot be separated at all. To establish the relation of the supporting and the supported, there obtains the separation of the two, space and the form. Discriminations regarding space and form may be discarded as fictitious like a hare's horn.[2]

Space is generally conceived as an all-pervasive entity which provides accommodation to other elements of the world. It is said to be non-composite also. These two characteristics of space endow eternity and permanence to space. But Mādhyamikas do not accept this position. They critically examine the nature of space and hold that space is also composite, i. e. made up of parts. If the space is non-composite, a particular object like chair will occupy the entire space, leaving no room for other objects to be accommodated. If it be argued that a chair exists in one part of space leaving sufficient room in another part for other objects to exist, it will amount to saying that space has also parts like other

1. T.S.P., P. 140, II. 8-12 (Tattvasaṁgraha Panjikā).

2. Lankā-53-54 Sūtra-page 48.

material objects.[1] Space is alwaya known by such epithets as 'here', 'there' and 'elsewhere'. These epithets clearly speak of the compositeness of space. Composite entities are always conditioned by causes. Thus space also is reduced to something impermanent and mutable.

Further, if it is argued that space is a mental notion devoid of objective existence, the purpose of the Mādhyamikas is served as they do also hold that space is subjective form (Vikalpa).

On the basis of Kathāvattu[2], space is described as a permanent concept. Space is void, unperceivable and without objective existence. Strangely enough Kathāvattu goes so far as to maintain that Ākāśa is not an Asamskṛta Dharma or unconditioned entity.

Ten characteristics of space have been shown in Milindapanha—"Space is unborn, undecaying, permanent, static, unknown, absolute, not to be stolen, independent, non-obstructive, and infinite"[3].

Some minor views with respect to space as gleaned from Kathāvattu are stated below[4] :—

Space possesses three modes, viz. limited, without any objective reference and void. The first mode is conditioned, while the other two are mere mental fictions. The Uttarapathakas and Mahisaskas hold that the latter two modes are unconditioned as they are mental fictions.

The Andhakas hold that void space is visible as we cognise enclosed space like keyholes. Thus space is rūpa i. e. material visible object. There are some who do not agree with the view of the Andhakas and maintain that enclosed space is not

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1. CŚ-IX. 6 Pradeśini na sarvasmi pradeśo nāma vartate.
2. KV. VI. 2, 4. 6; XIX 3, 4.
3. Tasmāt Suvyaktam Anyo'pi Pradeśo'sti Pradeśini. Mil-(4.8.81)
4. KV-VI-2, 4, 6; XIX, 3, 4.

visible such as the enclosed space between two pillars. It is a figment of ideation and not an object of sense-cognition.

A critical re'sume'

We have enumerated the views of the different schools and sub-schools of Buddhist thought on the nature of space. The divergence of views regarding a very commonplace fact which is inevitably encountered in everyday experience only proves that the nature of things is not capable of being determined in the light of commonsense. It is undeniable as Kant has shown that there can be no experience of outer objects without reference to space. The difference of philosophers' appraisal ultimately reduces to the issue whether space is a subjective concept or an objective real existing in its own right. The idealists, particularly subjectivists, cannot be expected to subscribe to an external reality like space. If there be no extramental object, space will also have no *raison d'etre.*

Kant regarded it as a subjective form of intuition. Realists would regard it as a form of external matter in the sense that it must be there as the universal objective conditioning all external objects whether perceived or inferred. One remerkable feature of space consists in its opposition to division. Space divided will be nothing but space, because it is devoid of sensible qualities. The idealists have found in it a veritable crux for the realists. Space defies all limitations whether it is a notion or an objective fact. However much the analysis of the concept of space may demonstrate its refractory nature, one cannot get rid of it.

This also holds good of time *mutatis mutandis*. Time can be reduced to atoms ideally but it transcends all such attempts at division. It eludes all grasp of it. The analytical division attempted by philosophers only shows that time as well as space can be viewed as one and many according to the exigencies of our knowledge of things. The problem, therefore, will ultimately turn out to be reconciliation of one and many.

The philosophers have revelled in exposing the antinomies inherent in the compresence of unity and diversity. Whatever be one's philosophical predilections, it is an ineluctable concept.

PART–B

Jaina concept of time and space

Kāla is real (sat) according to Jaina Philosophy, as it possesses origination, decay and permanence which is the characteristic of all reals[1]. This philosophy admits the reality of change and motion in physical domain, and growth and development in organic world, hence it has to maintain the reality of Kāla. If Kāla is reduced to illusion, then consequently change and growth also become unreal appearance. Kāla is a substance (Dravya). In the beginning, it has not been mentioned as dravya by the Sūtrakāra but its function is described. Later on, it is included in the list of Dravyas[2]. Dravya or substance is that which possesses Guṇas (qualities) and Paryāya (modes)[3]. Kāla makes the modifications of Pudgalas (physical objects) and also of spiritual objects possible[4]. Kāla is ever present, hence material objects (Pudgals) undergo constant changes[5]. Constant change is the very nature of these Pudgalas, yet there must be an efficient cause. Just as the axle of the potter does not create any movement in the wheel rather it simply keeps the wheel moving, likewise kāla assists in the changes of Pudgalas[6]. Without Kāla the

1. Tattvārtha-V. 30–Tadabhāvāvyayani nityam.
2. ibid–V.39–Kālasca; Pancāstikāya–102
3. Tattvārthasūtra–Guṇa–Paryāyavat Dravyam
4. Dravyasamgraha–Gāthā–11.
5. Pancāstikāya-98–Jivāḥ pudgalakāyāḥ saha sakriyā bhavanti na ca śeṣāḥ.........Kālakaraṇāstu.
6. Dravyasaṁgraha–Gāthā 21 (Vṛtti)–Svakiyopadarupena Svameva parināmamananam padarthanam kumbhakāracakrayāghastana (Sivat)

evolution of the world will cease to be. In the absence of samaya (moment) the origination and destruction of objects will appear as strange phenomena. Thus it may fairly be concluded that kāla or time is a substance.

Jaina thought maintains that there are two kinds of Kāla (time)-viz. Vyavahāra kāla (Empirical time) and Niścayakāl[1] (transcendental time). Innumerable and partless atoms of time (kàlāṇus) which fill the Lokākāśa is Niścayakāla. In alokākāśa there is absence of matter (Pudgala), hence there is absence of Kālāṇus also. These *aṇus* (ultimate particles) are not capable of mixing up with one another, hence they always remain separate. They cannot form a skandha. They are compared to the heaps of jewels (Rayanan rasimiva). The jewels embedded in a garland remain separate, likewise these aṇus do not form a Kāya (aggregate) as other five Dravyas or substances do[2]. Besides, each kalāṇu occupies only one Pradeśa (Space point), hence it does not possess a kāya[3]. Pradeśa is that portion of space which is obstructed by an aṇu[4] (atom). These Kalāṇus are imperceptible, formless and inactive[5]. Thus they have existence but no extension.

According to Jaina thought, extension is of two dimensions viz. Urdhva-Pracaya (vertical extension) and Tiryaka-Pracaya (horizontal extension). Besides kāla, all other Dravyas possess extensions in both these dimensions. As kāla consists of infinite samaya (instants) hence it possesses Urdhva-Pracaya (vertical extension). Kāla occupies only one Pradeśa hence it does not contain Tiryak-Pracaya (horizontal

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1. Pancastikaya-100-Kālaḥpariṇām bhavaḥ. Parināmo Dravyakālasambhutaḥ.
   Dvayoreṣa Svabhāvaḥ Kālaḥ Kṣaṇabhaṅguro niyataḥ
2. Dravyasaṁgraha-25.
3. Dravyasaṁgraha-Gathas-24.26
4. Dravyasaṁgraha-Gāthā-2.
5. Tattvātthasāra-III. 44.

extension)[1]. This vertical extension of kāla points to the fact that the world is constantly growing and developing with the help of kāla or time.

The Niścayakāla is the substratum of Vyavahārakāla or samaya[2]. It is never the cause of the changes of substance, it simply helps in producing changes. It is eternal[3].

Vyavahārakāla is also known as samaya in Jaina thought[4]. This samaya is the very modification of Niścayakāla. But it is made explicit by the movements of jivas (living beings) and Pudgalas (physical objects). This Vyavahārakāla is dependent on Niścayakāla for the determination of its measure[5].

Vyavahārakāla has a beginning and an end whereas Niścayakāla is eternal and infinite[6].

The chief characteristic of Niścayakāla is Vartanā i. e. continuance or duration[7].

Kāla or time assists in maintaining the existence of other substances. It is the substratum of all changes and transformations. In other words, it helps in origination, decay and permanence of the entire universe. It also helps in growing young and old[8]. Kāla (empirical) also undergoes change, growth and decay, viz, Utsarpini and Avasarpini.[9] It is itself

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1. Dravyasaṁgraha–Gāthās–22 & 49.
   Pravacanasāra–Samaya–Viśiṣṭa Vṛtti Pracayastadūrdhvapracayaḥ Pradeśapracayo hi tiryak pracayaḥ.
2. Pancāstikāya 100
3. ibid–100
4. V. 50–Tattvarthasūtra–Soanantasamayaḥ.
5. Pancastikaya–25 ... Kālaḥ parāyattaḥ.
6. Pañcāstikāya -100
7. Pravacanasāra–"Sarvadravya vartanā nimitta bhutaḥ"
8. Tattvārthasūtra–V.22 Vartanā Parināmakriyā paratvāparatve ca Kālasya.
9. Tattvārthasūtra–III. 27–Ṣaṭsamayābhyāmutsarpiṇyavasarpiṇībhyām.

the cause of change. If any other cause is posited for the change of kāla, it will lead to the fallacy of infinite regress. Kāla is an independent entity and its chief function is to assist in bringing changes in other substances.

Division of Time

The smallest unit of kāla is samaya. Samaya is defined as the period of time taken by an aṇu (atom) in traversing to its consecutive aṇu (atom)[1]. Vyavahāra kāla consists of infinite samaya. The time taken by a normal adult person in inhaling and exhaling is Prāṇa. Seven Prāṇas comprise one Stoka. Seven stokas make one Lava. Thirty eight and a half Lavas form one Nāli. To Nālis make one muhurta. Thirty muhurtas form one Ahorātra. Fifteen Ahorātras form one Paksa. Two Pakṣas make one month. Two months together make a Ṛtu (season). Three Ṛtus make one Ayana. Two Ayanas form ā year. Five years make a Yuga. The Yugas are named as Saurya, Savan, Cāndra, Nakṣatras and Abhivadhite.

Eighty four lacs of years form a Purvāṅgas. One Purva consists of eighty four lacs of Purvāṅgas. The higher computations are known as Ayuta, Kamala, Nalina etc.[2]

The greatest unit of kāla is Mahākāla, which is the sum total of Utasarpiṇi and Avasarpiṇi kāla and the smallest unit is 'samaya'.

A Critical Re'sume'

The conception of time in Jaina ontology seems to bear close affinity with that of the Vaiśeṣika. The Niścaya kāla[3]

1. Tattvārthasutra–V.40
2. Tattvarthasutra–IV. 15–Tatkṛtaḥ Kālavibhāgaḥ; Pancāstikāya 25.
3. Tattvārtham Niścayo bakti Vyavahāro tathoditam (Niścaya naya represents the transcendental standpoint which takes stock of things in their intrinsic character apart from their relation to and consequent interruption of other things. Vyavahāra is the empirical standpoint which takes stock of the changes induced by external reals which are interrconnected and interuptive)

corresponds to the metaphysical unitary kāla called also Mahākāla. This one, infinite, eternal, unchanging time hardly fits in with the empirical events. These events have a before and an after. In fact, as Bradley in his Appearance and Reality has shown, time is inconceivable without a before and an after. Even the smallest atom of time, variously designated as Kṣaṇa (moment), Samaya in Jaina terminology, is found to be liable to fission into a before and an after. Idealists have made capital out of this trait of time and have reduced it to a subjective concept or an illusion.

We observed before that however much the philosophers may exult in their condemnation of time, it is impossible to do without it in both common place and scientific estimation of things. Time as eternal 'now' is a grand concept but an average man finds in it nothing but bizarerie. The ultimate reality is perhaps timeles. But constituted as we are, the human mind cannot make a picture of it.

The Jainas make change the sssential character of all reals. Though change may be intrinsic, it is intelligible only in terms of time. Obviously there seems to yawn an unbridgeable gulf between the metaphysical time and the empirical time. It is obvious that the antinomies found in the concept of time which though diverse must be one, have unbalanced many a philosopher. Time is one, and at the same time many. It is eternal, yet perishing every moment and arising again like phoenix from its ashes. The Jaina philosopher with his law of Anekānta which steers clear of the antinomies invented by pure Logic, could have given an intelligible account of time as a constant variable. Every real is dynamic according to Jaina thought and so also time. But the diversity entailed by changes does not reduce it to atoms as is done by the Buddhist fluxist. An eternal time with everchanging moments would answer to the exigencies of logic and experience both. But we are disappointed to find the Jaina philosopher unconsciously trapped in the trammels of conventional philosophy who keeps the two types of

time—one, unitary and eternal continuance and another dispersed in diverse discrete moments in two water-tight compartments.

The Concept of Space (Akasa)

Jaina thought exalts the reality af Ākāśa or space. The existence of Pudgalas depend on spatial accommodation.[1] Space is devoid of the qualities of Pudgala. It has no colour, no taste, no touch, and no smell. It is eternal existence, formless and inactive.[2] It is also unconscious. Ākāśa or space possesses both innumerable and infinite Pradesas hence it is aśtikāya (extended body).

Śabda arises from Skandha (a class of material objects existing apart). In other words, sound is material in character. It is not the nature of Ākāśa. If it is the nature of Ākāśa it should also partake of the nature of being formless like Ākāśa. In that case, it cannot be grasped through the organ of hearing, which possesses form. Thus it is not the nature or the quality of Ākāśa.[3]

Regarding sound (Śabda), the Jainas have got an original theory of their own. They regard it as matter existing independently and alongside of other material objects. When the sound matter comes in contact with the auditory organ by moving forward to the eardrum, auditory perception takes place. As we have observed before, it is not the quality of Ākāśa as Vaiśeṣika holds but some kind of substance. It is noteworthy that a school of Mīmāṁsakas also hold that sound is a substance and not a quality of Ākāśa. According to them, Śabda (word) is a metaphysical entity which is eternal.

1. Pancāstikāya–90. Śarvesāṅ Jivānāṅ Śeṣānāṅ tathaiva Pudgalānāṅ ca yaddadāti vivarmakhilaṅ Talloke Bhavatyākṇśaṁ.
2. Tattvārthasūtra–4.7.
3. Tatparyavrtti on Pancastikaya–79.

Bhāsāvargaṇāskandebhya utapadyate ityupādakaḥ niyato niścitaḥ na cākāśdravyarūpas tad guṇo vā yadvākāśaguṇo bhavate tarhi. Śravaṇendriyaviṣayo na bhavati kasmāt Ākāśaguṇasyamurtatvāditi.

As regards Ākāśa, it is the name of space in Jaina ontology. No distinction is made between Ākāśa and Dik as is done in Vaiśeṣika.

Ākāśa is that which provides room for Dharma, Adharma, Kāla and Pudgalas. Dharma and Adharma pervade entire Lokākāśa (mundane space). (Tattvārthasūtra—V.9 (Bhāsya) —Lokāśasya tu Dharmā-dharmaikjiṁ Vaistulyaḥ. This aspect of Ākāśa is called Lokākāśa (mundane space) [1] Lokākāśa or mundane space consists of innumerable Pradeśas. It is limited. Here a pertinent question arises : how does Lokākāśa or mundane space accomodate infinite physical objects ? The reply is : just as a small room accommodates innumerable lights or just as a small bag contains innumerable gold coins, likewise Lokākāśa, which has innumerable Pradeśas, contains infinite physical objects. [2]

Beyond this Lokākāśa (mundane space) there exists Alokākāśa (Extra-cosmic space). This Alokākāśa (extra cosmic space) is devoid of physlcal objects. It has infinite Pradeśas.[3] It is also indestructible.

Jaina Philosophy maintains that Śabda or sound is not the quality of Ākāśa as some other philosophers hold. Śabda (sound) is produced by the collision of two Skandhas.

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1. Pancastikaya-91 and Tattvarthaśutra-V. 12.
Jīvā Pudgalakāyāḥ dharmādharman ca lokato'manye
Tato'nanyadanyadākāśamantavyatiriktaṁ.
2. Tatparyavrtti on Pancastikaya-91.
Ekāpavarke ānekapradipaprakāśa Vadekagūdhaṇāgarasagad-yāṇake.
3. Pancāstikāya-91 Tatvarthasutra—V9
Ākāśasyānantaḥ.

CHAPTER V

The Concepts of Space and Time in the Nyāya–Vaiśeṣika

The Existence of Time

The Nyāya–Vaiśesika system believes in the theory of creation. Kāla is considered as the eternal back-ground of the creative process. [1] Time is the cause of things that are produced. Besides, time is conceived as the substratum of the notions of priority (Paratva) and posteriority (aparatva), of simultaneity (Yaugapadya) and succession (ayaugapadya), and of quickness (Kṣipratva) and slowness (ciratva). [2]

Oridinarily priority means the lapse of larger amount of time and posteriority means the lapse of smaller amount of time. If they are used in the above sense, the inference of time becomes superfluous. Hence in Nyāya–Vaiśeṣika system, the notions of priority and posteriority are related with the revolutions of sun. A proposition such as 'Now there is the jar' takes into consideration the motion of the sun and so on. When we say 'now', we automatically refer to the motion of sun above or below the horizon by so many degrees [3] Likewise the notions of priority and posteriority depend on the revolution of sun. These two qualities are possessed by every produced object in respect to its relation to a relatively

1. N. K.–Page 22–Sarvesāṁ Saṁyogināṁ murtadravya–nāmākāśaḥ Samānodeśa eka ādhāra ityarthaḥ……Bhāṣā– Pariccheda–45– Janyānāṅ Janakaḥ, Kālo Jagatamāśrayo mataḥ.
2. Bhāṣī Pariccheda–46 – Paratvāparatvadhīhetuḥ VS., II. 2. 6; PPBh, P. 63–Kālaḥ Parāparvyatikarayaugpadyā–yaugpadyaci-rakṣiprpratyayaliṅgam.
3. Siddhānta Muktāvalī–45.

   Idanīṁ ghata Ityādipratītiḥ Sūryaparispandādinā ghaṭādeḥ sambandho vācyaḥ.

large or small number of revolutions of the sun. In other words, when we say Devadatta is prior to Yajñadatta, it is the same thing as to say that Yjñadatta is posterior to Devadatta. The above statement clearly indicates that Devadatta is related to a larger number of solar revolutions than Yajñadatta.[1]

Now a pertinent question arises : how can any object be related at all with the solar motion ? No direct relation of samavāya is thought of as the motion of the sun inheres in the sun alone. The relation of Samyoga (conjunction) is not possible between the object and the rotating sun as they are situated at wide distances. Thus they are supposed to be related through a connecting link.[2]

That connecting link must be a substance which is in conjunction both with the object and with the sun in which motion inheres. The connecting substance must be of unlimited magnitude as it has to determine the priority and posteriority of all finite substances of the world. In other words, it must be an ubiquitous substance. Now there are two other ubiquitous substances viz. Ākāśa and soul. But these two, though they are ubiquitous, cannot be a connecting link, The ubiquitous substance in question should not only establish relation between the object and the sun but should also be capable enough to establish relation between the object and the motion of the sun. Both Ākāśa and soul lack this capability. If Ākāśa possesses the capacity, then it should be possible that the sound

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1. Siddhānta-Muktāvali-46.
Paratvāparatvabuddherasādhāraṇaṁ nimittāṁ Kāla eva. NVTT, II. 1. 39-Suryodayāstamayakriyā- pracayālpattva - bahutvaviśiṣṭātpiṇḍādeva paratvāparatvebhaviṣyataḥ Kṛtamatra dravyāntareṇa Kāleneti cet.

2. Na Ca Sūryagatiḥ Sākṣātpiṇḍasambadhā,nāpi saṁyuktasamavāyaḥ Sambhavati piṇḍasūryayoḥ Samyogābhāvāt...... Evrieaitādṛsamekaṁ dravyam svikāryaṁ yat yāvatpiṇḍasūryasambadham- KVBhā-Page-137.

produced by a particuar stroke in one drum should cause similar sound in other drums as Ākāśa is connected with those drums also being an ubiquitous substance. If the soul establishes such relation, then finite things will acquire peculiar attributes as it is connected with all finite things. In other words, the fragrance of rose will be perceived in sandalwood and the yellowness of gold will be perceived in white lily. It seems plausible to hold that mere conjunction of substances with a third never guarantees any connection between one of the two substances and the property of another. The absurd position shown leads the Vaiśeṣika to posit a unique substance which may establish indirect relation between the finite substances and the Sun. This unique substance is named Kāla (time) in Vaiśeṣika system. [1]

Regarding Kāla also, it may be argued that if it is posited as the connecting link between two substances, it is not immune from the difficulties faced by the two ubiquitous substances, viz., soul and Ākāśa. As they produce confusion in qualities of substances, they are debarred from being the connecting link. Likewise Kāla may suffer from the same malady. To this, the Vaiśeśika replies that Kāla is posited after proving that the two ubiquitous substances lead to absurdity. The existence of Kāla is proved by argumentum reductio ad absurdum, which is a logical process. Besides, in the particular ·case the

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1. Siddānta M-45-Sa ca sambandhaḥ saṁyādirna Sambhatīti Kāla eva tatsambandha ghaṭakaḥ Kalpyate.
KV-pp 115-16, NLV-pp 290-91.
Na ākāśasya Svapratyāsattimātreṇa Saṁyūkta - Samvāyinaṁ dharmamanyatra Saṁkrāmayitumasamarthatvāt. Tathātve Caikatra bheryāmabhihātayaṁ Sarvabheriṣū Sabdotpattipraasaṅgāt. Atmano'pi dravyāntaradharmeṣu dravyāntarāvacchedaya svapratyāsattyatiriktasannikarṣāpekṣitatvāt.
Anyathā Vārāṇasīsthitena nīlena pāṭaliputrasthitasya sphatikamaṇerūparanjanaprasaṅgāt.

capacity is judged in a particular reference i.e. the relation of a finite substance with the solar motion. Hence there is no possibility of interchange of qualities among substances. Thus there is sufficient logical grounds to posit Kāla as the unique substance which connects finite substances with the solar motion.

In the same way, the notions of simultaneity and succession, and of quickness and slowness are reasonable grounds for the inference of time. Simultaneity means the relation of two (or more) events with a certain solar motion and succession points out such relationship with dlfferent solar motions, Quickness or slowness of an event is nothing but the relation of the event with longer or smaller solar motions.[1] These notions are possible only in relation to time (Kāla) hence the inference of time is a logical necessity.

The category of causality presupposes the existence of time. When it is said that Ākāsa is uncaused, it simply means that Ākāsa is never non-existent or it is existent from eternity. Likewise a barren woman's son is also uncaused as it is non-existent from eternity. Vaiśeṣika system believes in Asatkārya-vāda hence causation is possible only in the case of non-existent objects which come into being after the operation of causes. The temporal non-existence is a necessary precondition for the production of events, Hence the principle of causation can be fairly explained only in particular reference to time.[2]

Further Kāla is taken to be the cause of changes and modifications. When we say that one person is old and another person is young, we simply mean the physical changes undergone in the passage of time. Hence Kāla is inferred as the only cause of these changes.[3]

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1. KV-Page 117, NVTT-II. 1. 39, Page 281.
2. NK-Page 65.
3. NK-Page 65.

The existence of Kāla as an independent category seems to be proved by the above arguments.

Characteristics of Kala

The basic nature of Kāla suggests that it is ubiquitous [1] and is of superlative dimension. The notions of priority, posteriority are intelligible only in reference to Kāla. It is also conceived as instrumental cause (nimitta Kāraṇa) of all objects of the world. [2] This causation suggests that Kāla is eternal. [3]

Kāla is also conceived as the substratum of motion. The judgment 'Doing at present' clearly points out that Kāla is the substratum of objective motion. [4] Further, Kāla is the substratum of the universe itself. Thus it is the cause of the origination, maintenance and destruction of all objects of the world. [5]

The distinction in Kāla such as moments etc. is due to its various limiting adjuncts. [6] Our conception of a moment etc. depends on some action. Suppose disjunction takes place in something through action. Cause always precedes effect, hence there must be an interval between the action and resulting dis-

1. KV–Bhā–Page 137.
   PPBhā–Page 63, Bhā. P. 26.
   Kālakhātmadiśaṁ sarvagatatvaṁ paramaṅ mahat.
2. 1 VS–II. 2.29, NS–II, 1.23,
   (also Bhā) – Digdeśakālākāśe svapyevaṁprasangaḥ. Bhāṣā–Pariccheda–45.
3. PP Bhā–Page 64–
   Tasyākāśavaddravyatva tvanityatve siddhe kālaliṅgāviśeṣādānya–saikatvepi sarvakāryānāmārambhakriyābhinirvṛttisthitinirodhopā–dhibhedānamaivatpācakavadvā nānātvopācāra Iti.
4. VS–V. 2.26–Idānīm gacchatītyādipratītistu idānīm ravītityā–dipratītivat kālikasambandhāvacchinnādhārādheya bhāvamava–gāhate na tu samvāyasambandhavacchinnamiti.
5. Bha. Pari–45.
6. Ibid–46 ......Kṣaṇādiḥ syādupādhitaḥ.

junction. In other words, there is the previous non-existence of the disjunction produced by that action. The time associated with that is the First moment. This disjunction becomes the cause of the destruction of previous conjunction. Again there must be an interval between disjunction and the dissolution of the conjunction. This is the second moment. In other words, the disjunction determined by the antecedent conjunction is the second limiting adjunct. Again, when this conjunction ceases, that cessation becomes the cause of the subsequent conjunction. As such, there must be an interval between the two. Thus there is the previous non-existence of that conjunction, and this is called the third moment or the third limiting adjunct. Again subsequent conjunction arises, and the ᵗaction determined by the time associated with that is the fourth moment or the fourth limiting adjunct. At the fifth moment, the action ceases. It can not be argued that the term moment would not be used after subsequent conjunction, for there would be other actions still. Further it may be urged that at the time of dissolution, all actions cease and such moments will not exist. In reality, Nyāya-Vaiśeṣika system does not admit such distinction at the time of dissolution. If at all it is admitted that these distinctions remain, it can be explained in relation to the destruction of non-eternal objects. The aggregate of particular groups of moments accounts for days, months etc. [1]

Some hold that these divisions are innate in the nature of

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1. Siddhā M. – 46 – Kalastvako'pi Upādhibhedātkṣaṇādivyavahā–ravişayaḥ.
   Upādhisṭu Svajanyavibhāgaprāgabhāvācchinnam Karma, Purvasaṁyoganāśavacchinnottara–saṁyoga–prāgabhāvo vā, Uttarasaṁyogāvacchinnaṁ Karma. Vā, Na cottarsaṁyogānanta–raṅ Kṣaṇavyavahāra na syāditi. Vācyam Karmāntarasyāpi sattvāditi. Mahāpralaye Kṣaṇādivyavahāro yadyasti Tadānā-yatyā Dhvaṅsenopapādanīya īti. Dinādivyavahārastu Tattkṣaṇ-akutareveti.

Kāla itself and are not due to limiting adjuncts as suggested above.[1] But this is not acceptable to Nyāya—Vaiśeṣika for the following reasons :—

1. There is no evidence percetual or inferential for the existence of these distinctive moments in time. They are only felt when particular events occur. So there is no perceptual evidence in support of the innateness of the characteristic.

2. Inference is also not capable of being adduced as proof because it must be based on observed data. There is on the contrary absurdity entailed by this supposition of occasional emergence of these qualities. On the contrary if they are innate, they were to become eternal facts, so the division of past, present and future or of prior and posterior would have no meaning. As we have observed before, the Nyāya-Vaiśeṣika philosophers do not subscribe to the theory of Satkāryavāda. If the effects are pre-existent, and the causal operation only serves to reveal the existent facts, nothing new would be produced. This will be tantamount to the denial of causation itself and effect eternally existing in the view of Vaiśeṣika philosophers, is a contradiction in terms.

Is Perception of Time Possible ?

The Bhaṭṭa Mīmāṁsaka and the Vedāntins hold that time is an object of perception, Time is perceptible as it is all pervasive like the soul. If time is not perceptible, then its very existence will not be established, because there is no source of valid knowledge regarding it, other than perception. Further the Mīmāmsaka argues that it is a qualifying element (Viśeṣaṇa) of the notions of Kārya. The notions of simultaneity and succession, quickness and slowness etc. do not depend only on Kārya.[2]

1. KV Bhā, Page 144.

2. Māna–Page 187–Vyomakāladiśāmādau pratvakṣatvaṁ Samarthyate; NM. Pt. I page 124–Pratyakṣagamyatāmeva ke citkālasya manvate. Viśeṣaṇatayākāryapratyaye pratibhāsanāt. Krameṇa

The Vaiśeṣika has not accepted this position of the Mīmāṁsakas and the Vedāntins. It has related time determinations to solar motion. Thus time is an object of inference. According to the Vaiśeṣika, Kāla (time) is devoid of colour hence it cannot be an object of perception. The above argument of Vaiśeṣika suffers from the fallacy of universalising a particular rule. Certain perceptual data possess sensible character whereas others do not. The Vaiśeṣika holds that colour itself is colourless, yet it is an object of visual perception. Atoms do not possess sensible colour and they are infrasensible. In other words, the possession of colour is not the only cause of visual perception. The perceptibility and the non-perceptibility of any object depend on the facts of experience, hence it cannot be contradicted by any apriori law. Laws must always conform to the facts and must not contradict or supersede them. [1]

Further it may be argued that kāla as a viśeṣaṇa is devoid of colour hence it cannot be perceived. This argument is met on the ground that there are certain viśeṣaṇas (adjectives) which are devoid of colour yet they are perceived, for instance, general concept or universal (Sāmānya) and the like. It may be urged that this rule applies to substance alone. Against this, it may be said that an object of cognition through the sense organ of sight is visual, even if it is not a substance and even if it does not possess colour. When we say regarding a rod of iron that it is a heavy substance, the heaviness becomes an object of perception and the act of falling does not turn it into a content of inference. Thus the Mīmāṁsaka concludes that Kāla is an object of perception.

The Vaiśeṣika does not accept the position of Mīmāṁsaka

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yugapatkṣipraṁ cirātkṛtamitīdṛśaḥ Pratyayānāvakalpante Kāryamātrāvalambanāḥ.

1. NM–Pt. I. Page–124–Nanudravyeṣ ayaṁ niyamo na rūpādau, Dravye'pi nāyaṁ niyamaḥ yadrūpavaditi, taduktam, trāyānān, pratyakṣatvarūpavattvadravyādīniti.

and Vedantins that the time is a perceptual datum, because it overlooks the limitations of perception and also does not take into account the different aspects of time. The time which is perceived through sense organs is empirical and conditioned time. It does not take into consideration the .transcendental aspect of time. Transcendental time is unitary, indivisible, infinite and eternal. It transcends the limits of sensuous experience. It can be inferred as the common objective background of all the perceived qualities of events. Besides, simltaneity and succession etc. simply refer to the collocation and relatedness of events in temporal schemes. In the above cases, the extraneous modes of real time are perceived. Transcendental time transcends the limits of sensuous experience, thus it can never be an object of perception. The Nyāya-Vaiśeṣika very sensibly rejects the position of Mīmāṁsaka and Vedāntins.

Śrīdhara maintains that Kāla (time) is basically imperceptible but it is presented as a qualifying element in such perceptual judgement as I see the table now-here time is associated with the perceptual object as Viśeṣaṇa (qualifying element). In Jñāna Lakṣaṇa Pratyakṣa also, we admit such association to be valid. For example, 'I see a cold Ice.' Coldness can be perceived only through the tactual sense but here visual organ has been utilised. It is done on the basis of previous experience.[1] Conclusively it is said that the knowledge of time is inferential but it becomes an object of perception when it is taken as the qualifying element of a perceived object.

Are Divisions of Time Real ?

Vaiśeṣika does accept the divisions of time. Ordinarily we divide time into past, present and future. But the real time is unitary, infinite, and indivisible. The empirical divisions of

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1. NK-Page 65-Apratyakṣeṇa Kālena Katham Viśiṣṭā Pratītiriti cet tacāha Kaşcit viśiṣṭapratyayasyotpattāvindriyavat kāraṇatvaṁ kālasya na tu daṇḍādivadviśeṣaṇatvamitī.

time into past, present and future cannot be said to be the inherent nature of time. The Vaiśeṣika holds that time obtains these distinctions due to its relation with events. They are said to be limiting adjuncts, which are of finite duration. [1] In reality, time is the universal substratum and thus transcends all limits. It is independent and apart from the events of the world. But time as present is determined in relation to an event which has already begun but has not yet ended. Likewise, past is the time related to an event which ended [2] and future is related to an event which is yet to begin. Real time is never conditioned by these limiting adjuncts. Thus these time distinctions are reduced to the position of apparent reality which is not consistent with the realistic standpoint of the Nyāya-Vaiśeṣika.

The Nyāya-Vaiśeṣikɐ system is vehemently criticised by Śriharṣa for its stand on time distinctions.

The Vaiśeṣika maintains that past, present, and future are determined by external conditions, viz. different solar motions. Śrīharṣa says that this argument is not plausible as all the three divisions of time are related in the same way with the same solar motion. To illustrate, it is stated that a particular day is taken as present with reference to a particular solar motion but it is also considered as past and future in relation to that very motion. The day, refrrred to above, is considered as present on the very day, as past on the days that follow and as future on the days that come before, The same solar motion becomes the conditioning factor of the three time determinations which are obviously distinct from one another. Thus it lands the Nyāya-Vaiśeṣika in to an absurd position. [3] Śrīharṣa anticipates the

1. KKK-P. 379-Dvitiyascederādhirabhidhīyatām.
2. KV-PP. 120-121.
3. KKK-page-379. Ya eva divasaḥ sury'yagativis'eṣāvacchinno varttata iti Pratītaḥ sa eva hi tadavacchinno vṛtta ityavagamyate vatsyaruniti ca.

views of the exponents of the Nyāya–Vaiśeṣika. They may argue that the difficulty has arisen due to the absence of certain necessary qualifications regarding relation. We cognise as present when the time of an event is in 'actual' relation to solar motion. When the particular relation 'has been' and 'is no more', we cognise it as past; when the relation in question 'will be' but 'is not yet', we cognise it as future. Śrīharṣa argues that the above argument of the opponent is bare tautologous one. The term 'actual' signifies 'existent', which is synonymous with present. 'Has been' and 'will be' are also synonyms of past and future. [1]

It is furthher argued by the Vaiśeṣika that the time determined by action is present, the time determined by pre–nonexistence of action is past and the time determined by post–non-existence is future. [2] Śrīharṣa holds that the above argument also does not improve the position of the Vaiśesika. All the distinctions of time are determined in the same way by action and thus obliterate the distinction itself. Further the terms 'pre–non–existence' and 'post–non–existence' themselves refer to the notions of past and future. In absence of these two, i.e. past and future, the terms themselves become completely unintelligible. The Vaśieṣika is thus bogged up in the mire of its own arguments.

To save his position, the Vaiśeṣika suggests a modified definition of time–division. The time which is determined by a particular action is present in respect to that action alone and not in relation to other actions. [3] But this also does not save

1, KKK–page-380–Nanu satyametat Parañ yadā Tadupādhisambandhastasya Svarūpeṇāvatiṣṭhamānastadā bhavisyatpratyaya iti, naitadasti.

2. KKK–page-380. Kriyāvacchinnaḥ Kālo vartamānaḥ tatprāgabhāvacchinno bhūtaḥ tatpradhvaṅsāvacchinno bhaviṣyanniti cenna.

3. KKK—page 381. Yatkriyāvacchinno yaḥ kālaḥ sa tatkriyāpekṣayā vartamāno na tva anyāpekṣayā,

the position of the Vaiśeṣika. The same action determines present, past and future. A particular span of time which is known as present in respect to its relation to a particular action is also past and future in respect to that very action. In the above definition, present time has been shown to be determined by present action when the meaning of the term 'present' itself is not known. Further, even if it is held that the time determined by a particular action is present at the time of that action, yet it does not solve the problem. The Vaiśeṣika admits one time-continuum, hence such time cannot be the receptacle of time division. [1]

Śrīharṣa has attacked the time-division of Nyāya-Vaiśeṣika system. Time division is not the inherent nature of time hence it does not affect at all time-in-itself. Thus the criticisms of Śrīharṣa do not take away the reality of absolute time even if the time-divisions are shown to be unreal. These time-divisions really belong to the events which are in time.

The Nature of the 'Paesent'

In Gautam's Nyāyasūtra and bhāṣya on it, the three points of time are admitted as objectively real. The view of the opponent stands as : "There is no present (time) for when an object falls, the only possible points of time are that which has been fallen through, and that which has to be fallen through".[2]

Dr. Satish Chandra Vidyabhusan finds in this sūtra an explicit reference to the Mādhyamika standpoint. [3] This is obviously wrong, for according to this system, all the three points of time viz. past, present and future are unreal whareas

1. KKK-page 382 - Kālasya Kālāśrayatayānirūpaṇāsambhavāt— kālāntarasyānabhyupagamāt, tasyaiva kālasya tadāśryavattve Vyaktamātenāśrayattvāpatteḥ.
2. NBh-II. 1.40-Nā' dhvavyāṅgyaḥ Kālaḥ, Kim tarhi, Kriyāyaṅgyaḥ.
3. History of Indian Logic.

the view in question asserts the reality of the past and future and disparages only the existence of the present.

The Naiyāyikas have taken great pains to refute this supposedly Mādhyamika standpoint and have ultimately established the existence of the present (time).

In reality, time is not conceived in relation to space rather it is manifested through action. In the present context, action of falling determines the nature of time. The time when the action of falling has ceased, it is past, when the action of falling is going to happen, it is future and when the action of falling is going on, it is present. From the above explanation, it is clear that at both points of time (past and future) the object is devoid of action. Only in present, the action is always connected with the object. Past and Future are apprehended on the basis of existing connection and the time indicated by it. Thus Past and Future are relative to Present, if Present does not exist they become inconceivable. [1]

Further they hold that 'Past' and 'Future' cannot be accomplished entirely in relation to each other as held by the opponents. They (opponents) might quote such relative terms as 'long' and 'short', 'light' and 'shade' to illustrate that 'Past' and 'Future' are relative conceptions and they can be accomplished on this basis. As against this, it is argued that there are certain pairs of conceptions such as 'cold' and 'touch', 'odour' and 'taste' etc. which are not relative terms. Likewise Past and Future can not be accounted for on this ground. [2]

Further, 'Present' is conceived of in both ways, i. e. (a) as not associated with 'Past' and Future (b) as associated with them. The present which is unassociated is indicated by mere existence (continuity) such as "the substance exists". This expression points to the continuance of substance, while such expressions as 'is cooking', 'is cutting' etc. point to the

1, NBh.-II. 1.41-Arthasabdhāvavyaṅgyaś ca'yaṁ kālaḥ.

2. Ibid-II. 1.42.

mixed state of present. When we state 'he is cooking', some of the actions composing the composite act of cooking have already been performed, while some are being performed and some are yet to be performed. Thus the mixed state of 'Present' includes the three points of time. [1]

On the above grounds the Naiyāyikas come to the conclusion that the 'Present' time exists.

The Atomic View of Time

According to Vyāsa, the author of Yogabhāṣya, the moment is conceived as the absolute and irreducible unit. Apart from these moments, the infinite time has no objective reality as held by Nyāya-Vaiśeṣika. These moments are not determinations of time which depend on external limiting adjuncts. If a change is represented by time-series, moment is the unit of change. Consequently all physical changes are reduced to the motions of atoms in space. Even an atom has subtler parts (Tanmātras), hence the movement of one atom to another must take more than one moment. The motion of tanmātras from one point in space to another must be instantaneous and it is considered as absolute unit of change. Time is mono-dimensional. Two moments cannot co-exist, consequently any series of moments does not exist in reality. Order in time may be understood as the relation of antecedence and sequence between the moment that is existent and the moment that has just passed away. Series of moments is an ideal construction. The intellect pieces together these discrete moments. Thus only one moment i. e. the present exists. The future and the past do not exist as independent entities though they share in change of mark (Lakṣaṇa Pariṇām). [2]

The Vaiśeṣika does not agree with the view that the Time–

1. NBh. II, 1.43-45;

2. YBh. III. 52kTasmād evaikaḥ Kṣaṇo na purvottarakṣaṇāḥ Santiti tasmādnāsti tasmāhārah.

series is the 'schema' of the understanding and is formed by the conceptual fusion of discrete moments. Such a fictitious series is never encountered by us in our empirical consciousness.[1] But the Yoga does not reduce the moment to absolute non-entity. The moment is regarded as a real entity even by the Vaiśeṣika. But it is not considered as absolute entity as is held by Vyāsa. It is merely a relative entity according to the Vaiśeṣika.

The Vaiśeṣika further maintains that the objective existence of a momentary entity cannot be proved. The perceptual judgment, "The jar exists for many moments" is never a clear proof of the objective existence of moment. The moment referred to above has no transcendental existence. As a moment is supposed to vanish just after its contact with the sense organs, it cannot synchronise with the perceptual judgement. In absence of probans, it cannot even be proved by inference. But, is not the use of the term 'moment' superfluous ? To this, it is replied that it is a part of cognition. Further, the question is raised that every cognition presupposes a determinant datum hence a particular datum in this case should be pointed out. Vallabh says that the datum in this case is a particular motion and the pre-non-existence of disjunction caused by it as the determining factor of motion. Each of them covers a definite duration, hence they cannot separately be the datum. These two, taken together, form the datum of cognition. But how are they related ? Vallabha replies that every cognition acquires them together, hence cognition itself is the connecting link. The datum of such a cognition is the moment itself. Thus we arrive at the concept of moment indirectly. A moment is the point of time which refers to the final phase of cause and the initial phase of effect.[2] Vallabha defines moment as that intervening span of time which comes between the completion

1. NKU. Pt. II. P. 5.

2. NLV-pp 42-48.

of totality of causal conditions (Sāmagrī) and the production of effect. [1]

The above discussion reflects the staunch realistic attitude of the Nyāya-Vaiśeṣika system. This system does not admit that time is apprehended as the schema of understanding. It clearly disparages that Time-series, finite or infinite, is an ideal construction. Thus it upholds objective existence of metaphysical time. It is clearly emphasised that time per se is unitary and indivisible. The division of time as moment, hour and day etc. are external determinations which do not touch the unity of time. It does not accept the absolute reality of moment.

To sum up : Time is sought to be proved by inference by the Vaiśeṣika. Of course, time, as an eternal, transcendent principle is not amenable to perception. But this metaphysical time will at least be the presupposition of temporal experiences. Whether time is one or many will remain a vexed question. Of course, the law of parsimony demands that time should be a unitary principle just like space and this is borne out by the consideration that we cannot conceive a limit to time, prior or posterior. Time tends to shade off into a division which is without time. However distant and remote limit may be conceived, it turns out to be time. This also holds good of space. This point was noticed by Kant. As regards the proof of time, Kant adduces powerful reasons against the position that it can be proved by inference. The notions of priority, posteriority, succession etc. are all temporal notions. The Vaiśeṣika has sought to prove by inference the existence of time on the notions of priority, posteriority etc. This also holds good of the notions of past, present and future. As regards the number of solar motions, which has been made a ground by the Vaiśeṣika for inference of time, it has to be carefully scrutinised whether the notions of number is the condition or

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1. KV–p. 118.

a consequence of time. If number be only a consequential idea derived from time, which seems to be the position of Kant and if we are to endorse it, the arguments adduced by the Vaiśeṣika would all be guilty of committing the fallacy of petitio principii. It is, of course, almost certain that the notion of a unitary and eternal time is only a deduction from experiential data. But one cannot lose sight of the peculiar character of time as an eternal fact, which makes it timeless. Time bereft of sequence, before and after, is a notion which is difficult to conceive.

Kant has made time the form of intuition. He makes it the subjective condition and manner of perception of things both inner and outer. The Mīmāṁsakas also endorse the analogous position. They assert that there is no cognition in which time is not presented (Na soăsti pratyaya loke yatra kālo na bhāsate). But there is vital difference between the Mīmāṁsaka view-point from that of Kant. All universal and necessary ideas are believed to be subjective by Kant but the Mīmāṁsakas are realists out and out. They believe in the existence of objective universals. Time, of course, is not universal being. In the ultimate analysis it is a unitary principle. The Mīmāṁsakas contend, in view of the invariable presence of time in all perceptual experience as a determining principle, that time is a perceived fact. Time is rather the inescapable content of all experience. As we have noted above, Śrīdhara, the author of the Nyāya-Kandalī, regards time as the determination of perceptual content and herein he seems to subscribe to the Mīmāṁsist's position.

The Vedantist, of course, holds time to be an illusion. Bradley also finds contradictions in the notion of time and dismisses it as appearance. Mc. Taggart in The Nature of Existence analysed the concept of time and arrived at the conclusion that time is an illusion.

Whatever be the contention of the idealists, it does not carry conviction to an ordinary man who sees things in natural

perspective and from an unsophisticated point of view. All our activities and thoughts and reflections are made possible in and through time. It is extremely difficult, if not impossible, to conceive of the state of existence which is beyond time and to which all temporal determinations are irrelevant. The Vedantist Brahman and Buddhist Nirvāṇa are asserted as timeless facts, but it is also admitted by them that they are not accessible to normal experience. It must be admitted that time is an intractable concept. The difficulty lies in the fact that time is known as diverse units, as past, present and future, and yet it is a unique individual. It is thus one and many. By itself, it is timeless though it conditions and determines all processes of activity in temporal order.

The Existence of Dik (Space)

Kāla (Time) and Dik (Space) are considered to be background of the entire cosmic order.[1]

It is an admitted fact of experience that two finite objects cannot occupy the same space at the same time. They must exist in separate spaces. [2] But the determination of the relative positions of these objects necessitates the acceptance of the existence of a substance known as Dik, as this function cannot be performed by any other substance recognised in the system.

The Vaiśeṣika in consonance with its realistic attitude holds that Dik possesses objective reality and exists independent of experience. But it does not admit like Kant that it is an apriori principle which is apprehended as a necessary form of perception.

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1. NK—Page 22–Iha tu Sarveṣāmādhāra ityucyate.
2. NIV—Page 34. Vacyamevetivat ayogavyavacchedasya padarthāntare bhātvaṁ nastītyanyayogavyavacchedasya vā bibhāgārthatvāt.

Some Naiyāyikas are of the opinion that Dik is an object of perception.[1] It is cognised on the basis of the notions of east, west and the like. Some Mīmāṁsakas support the views of the Naiyāyikas.[2]

The Vaiśeṣika has refuted the perceptibility of Dik (Space). The arguments are exactly similar to those which have been given by us while refuting the perceptibility of time. The Vaiśeṣika says that 'the perception of Space' as conceived by the Naiyāyikas is really certain space relations of finite objects. But space is not, of course, a subjective idea but though objective, it is not perceived as it does not possess sensible colour and gross magnitude. Thus Dik (Space) is supra-sensuous and it is inferred through the notions of east, west etc.[3] The Vaiśeṣika further maintains that space is also inferred on the ground of spatial priority and posteriority.[4]

The existence of Dik (Space) is also proved on the bas s of the relative positions of the finite objects with reference to the sun. The space which is nearest to Mount udaya (Sunrise) in respect of a particular person is the east. Similarly the space which is farthest from Mount udaya is the west. Likewise the space which is nearest to Mount Sumeru in respect of a particular person is the north, and that which is the farthest is the South as it is clearly stated, "Mount Sumeru is situated to the North of all divisions of the world."

According to Indian mythology the sun rises on the mountain and sets on an opposite mountain. The first is called Udayācala and the other is Astācala. This account, of course, has very little philosophical significance and is now contradicted by modern theories. In spite of this anomaly, the

1. NM pt I page 125–Purvāparādipratyayagamyā dig api pratyakṣā.
2. Māna.—p. 187.
3. PP Bhā—page 66 (quoted above).
4. KV—page 122–Paratvāparatvaliṅgatvaṁ diśaḥ.

philosophical argument regarding the different points of space does not lose its logical value.

The existence of Dik is also established on the basis of relative positions of objects in relation to the contacts of the sun. For example, a particular object which is nearer to the rising sun is said to be in east whereas some other object is said to be in the west as it is nearer to setting sun. [1] Such notion is possible only when we admit Dik to be a substance which establishes relation between the sun and the objects concerned. Ākāśa and Atman are not capable of establishing such relation as both of them are incapable of transmitting dharma of one to the other. Kāla is also incapable as its chief function here has been confined to movement of objects alone. [2]

It is remarkable that the Vaiśeṣika philosopher tries to interpret space in terms of directions indicated by the points of compass. This demarcation of directions is effected by reference to the movements of the sun. The point at issue seems to be that the movements of the sun is a property which inheres in the sun and is obviously unrelated to the objects in space. This difficulty is overcome by the supposition of a medium with which both terms namely the sun and the objects are related. The relation of the solar motion with the object is an indirect one.

Now what will be the medium ? One may suppose that any ubiquitous substance may serve the purpose. The Vaiśeṣika believes in many such substances, such as Ākāśa, soul and time. What is then the necessity of postulating Dik as the medium in preference to Ākāśa, Ātman and time ? The answer

1. KV Bhā. pp. 147–48.

Etadpekṣyedaṁ pūrvametasya hi sannitādimādityasaṁyogāmityarthaḥ. Etadpekṣeyedaṁ paścimamityasyatu Sannihitacaramādityasaṁyogāvacchinna mitayarthaḥ.

2. KV Bhā—pp. 147–48.

cannot be found apriori. It is an empirical fact and experience alone can furnish the evidence. Time is related only to facts which are changing and moving. One does not feel disposed to regard spatial relations in terms of time. As regards the soul or Ātman, which being an all-pervasive substance, is in contact with every substance of limited dimension and is not found in experience as a medium of relation of external things. The soul is only the substratum of psychical events, viz. knowing, feeling etc. Moreover, so far as ordinary experience goes, the soul or ātman is felt to be operative within the physical body and not outside. Though metaphysical grounds adduced by the Vaiśeṣika tend to prove that it is as ubiquitous as Dik, Ākāśa etc., this conclusion is not arrived at from the evidence of experience. One is repelled by the sense of contradiction when one sheds unit to time or space, but no such contradiction is felt with regard to soul. So, on empirical grounds, the soul is not supposed to be competent to establish a relation between two external facts, though on logical grounds, they may be supposed to be related to the soul as they are to space. This seems to be the reason for postulating dik as a separate substance in addition to soul, time and ākāśa.

Another consideration is in favour of Dik as a separate substance. Dik or Space has no specific quality of its own. Ākāśa is characterised by sound as specific quality and the soul or Ātman by several specific qualities such as knowing, feeling, willing and moral dispositions etc. The same considerations which have made the Vaiśeṣika to eliminate Ākāśa as the medium of spatial objects also hold good in the case of the soul or Ātman. Dik or Space thus serves as the connecting link between the solar motion and the objects, by virtue of which it is called Dik and also is the substratum of external objects. It is the latter aspect which has received emphasis in physics.

Citsukha maintains that it is superfluous to assume the existence of Dik to explain the notions of spatial priority and

posteriority as they can be better understood otherwise. Citsukha holds that the prior and posterior relations among objects can be known through a measuring rod. This rod be so placed as it touches the spot of the ground where the observer stands and also the two bodies observed by him. If it is not long enough to touch the three objects, it may be repeatedly placed in straight line thus it will touch the three. This rod will have a series of conjuctions with the intervening objects or place units between the observer and the observed objects. These number and conjunctions will specify the priority and posteriority. [1]

The above argument of Citsukha does not seem tenable on the ground that it suffers from the fallacy of petitio principii. He has shown that the existence of space is not required and it can be explained in terms of units of measurement. But a unit of measurement is a unit of distance which is composed of series of conjunctions of mutually exclusive parts and it can be possible only when the existence of space is admitted. Thus the unit of measurement presupposes the existence of space.

The Definition of Dik (Space)

Space or Dik is defined as the cause of the notions of distance, nearness etc.[2] The Sarva-Darśana-Saṅgraha defines space as that which is different from time, yet is coextensive and is devoid of any specific quality. Space is the cause of usage with reference to far and near.[3] Space is also defined as the non-intimate cause of priority and posteriority but which is also unconnected with the revolution of the sun and which is not the abode of priority and posteriority.[4] Space is defined

1. Cit. p. 517. Dikkalpanām antarenai'va Vyavahārtuḥ svena Saṁyukta-pṛthivyādibhirhastadaṇḍā-diśaṁyogānām – alpī-yastva bhūyastvābhyām-eva viśiṣṭaparāparavyavahāropapatteḥ.
2. Bh. p. 46. Dūrāntikādidhīhetuvekā nityā Digucyate—page 62.
3. S. D. S. (Cal. Ed.)—page 103.
4. Sapta-Padārthi—page 66. Ādityasaṁyogānutpādya Paratvā-paratvāsamvāyikāraṇādhāraḥ Paratvāparatvānadhikaraṇaṁ Di k.

as that from which the notions of different directions are produced. Eleven directions have been mentioned in the Sapta-padārthī. Each direction is associated with a presiding deity.[1]

It is significant to note that in the above definitions of space, no genus has been mentioned. Space is unitary substance. But the conception of genus presupposes plurality of objects. Hence genus has rightly been avoided.

Some Attributes of Dik (Space)

Dik (Space) like time is also a substance as it is substratum of qualities. Space possesses the qualities of infinite extension, unitariness, separateness, conjunction and disjunction.[2]

Dik (Space) is a ubiquitous (Vibhu) substance and it possesses superlative dimension (Param Mahattatva). Arrangements of finite objects of the world are possible due to spatial relations only. It is in conjunction with all limited things. The different bodies possess the qualities of priority and posteriority as space pervades everywhere. Thus space is said to be of infinite dimension. This infinite space appears as finite when it is in relation with the finite objects. But this finitude of space is only apparent due to conditions and not real.[3]

Dik (Space) is eternal as it is a non-composite substance.[4] It has no parts and it cannot be produced or destroyed. When we speak of certain unrelated portions of space, it is done with particular purpose in view. It is not the basic nature of space.

Dik (Space) is unitary. Although it is one, it is spoken of as east, west, etc. owing to its different limiting adjuncts.[5]

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1. Sapta-Padārthi—page 18.
2. PPBh—page 67—Tasyāstu guṇāḥ saṁkhyāparimāṇapṛthakatva saṁyogavibhāgāḥ.
3. Bh—page 32—Kālakhātmasiśām sarvagatvaṁ paramaṁ mahat.
4. V. up.—II. 2. 11—Diśo dravyatvaṁ nityatvañca...
5. Bh. P—page 94—upādhibhodādekāpi prācyādivyapadiśabhāk.

These directions are to be understood as the qualities of bodies which are in space. If the different directions are taken as different spaces, it will create serious difficulties. If the East is a space different from the West, there is no common entity to interrelate them. Thus it will make the space dererminations incomprehensible. For the east is intelligible only with reference to and as contrasted with the west.

Dik (Space) and time are conceived as the efficient cause of the entire universe. They are the chief conditions of the production of all elements—both physical and non-physical.[1] Without space and time as substrata, causal functions of the objects are not conceivable at all. In the production of a particular object a particular material cause is no doubt necessary but the production of the effect presupposes space and time as permanent receptacle where the produced objects have their being. Thus space and time are necessary common condition in the production of effects. Besides, a particular event happens at a particular place and in a particular point of time. Causal operations can be determined only with reference to space and time. Thus spatio-temporal conditions become the intrinsic character of a cause in the production of the effect.[2]

Dik (Space) like time is supra-sensuous. In other words, it can not be directly perceived.[3] In support of the above contention, the arguments are the same as have been adduced in case of Kāla.[4]

Dik (Space) is said to be devoid of any movement as it is not of limited dimension (murta). Movements in bodies produce

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1. PPBh—page 25. ......Sarvotpattimatāṁ nimittakāraṇatvam ca.
2. N. K.—page 25—yatra deśekāle ca kāraṇāni bhavanti tatra teṣāṁ janakatvaṁ nānyatretyabhyupetavyaṅ viśiṣṭadeśakālayoraṅgatvaṁ Kārya *janayāya tayoḥ* kāraṇairpekṣaṇīyatvāt.
3. V. up.—*VIII. 1. 12.*
4. NM—page 124.

the illusion that the space is the Upādāna kāraṇa (material cause) of all these movements. But in reality, it is not such a cause. It is the substratum of these movements in a restricted sense only. Just as a jar is the substratum of curd, likewise space is the substratum of these movements.[1]

Certain Views Regarding Dik (Space) and Kāla (Time)

Raghunāth Śiromaṇi does not admit the separate existence of Dik and Kāla. He brings these two entities under Īsvara. According to him, independent existence of these two cannot be proved. The various notions explained by Dik and Kāla can fairly be explained by Īsvara through his limiting adjuncts.[2]

Veṇīdatta refutes the above contention of Raghunātha Śiromaṇi and holds that Īsvara being one cannot explain the difference of notions. Further it is improper to hold that the limiting adjuncts of Īsvara will explain the differences of various notions of Dik and Kāla as they are not found in the case of ubiquitous Jīvātman. The expressions like "This is Caitra" and "this is Maitra" point out that there are differences in Jīvātman. But according to the above argument, the multiplicity of Jīvātmans should have been explained by the limiting adjuncts of a single conscious soul. Further the multiplicity of Jīvātmans should have been included in Īsvara.[3] Besides the sayings of Śruti, "Imā Deśaḥ" and "Sa esa Saṁvatsaraḥ" prove the independent existence of Dik and Kāla.[4]

But the consequential difficulties as alleged to accrue from the postulation of God functioning as space and time are endorsed by the Vedāntist absolutist as the true nature of reality. It is not entirely implausible that Raghunātha Śiromaṇi came under the influence of Vedānta. As regards the

1. V. S.—V. 2. 21-25.
2. PTN—PP—1-3.
3. P. M.—PP—1-3.
4. PMV—PP—1-3.

plurality of individual selves, this also is not regarded as an ultimate appraisal of truth. The realist, who believes in objective space and time, is bound to face powerful objection arising from the synthesis of one and many in both space and time. But the Vaiśeṣika essays to give a rounded rational explanation of commonsense estimation of these fundamental categories.

Measurements of Space and Time

The Siddhānta Śiromaṇi of Bhāṣkara gives the following measures of time[1]:—

100 Truṭis	1 Tātparya
30 Tātparyas	1 Nimeṣa
18 Nimeṣas	1 Kāṣṭhā
30 Kāṣṭhās	1 Kalā
30 Kalās	1 Ghaṭika
2 Ghaṭikas	1 Kṣaṇa
30 Kṣaṇas	1 Ahorātra (Day)

Dr. Brajendra Nath Seal says that a truṭi of a time is equal to 1/33750 of a second, which is nearly the measure of paramāṇu of time as given in Viṣṇu Purāṇa.

The above measures were adopted by astronomers but the physicists have adopted some other measures which have been mentioned in Udayana's Kiraṇāvalī and Śrīdhara's Nyāya Kandalī as following[2] :—

30 Muhurtas	1 day (24 hours)
30 Kalās	1 Muhurta
30 Kāṣṭhās	1 Kalā
18 Nimeṣas	1 Kāṣṭhā
2 Lavas	1 Nimeṣa
2 Kṣaṇas	1 Lava

1. Kālamānādhyāya–Verses 16–17.
2. KV—Kṣaṇadvayaṁ lavaḥ prokto nimeṣastu Lavadvayaṁ.
Aṣṭādaśanimeṣāstu Kāṣṭhā triṅśantu tāḥ.
Triṅśat kalā muhūrtaḥ syāt triṅśadrātrayahaṇī ca te.

According to Dr. B. N. Seal, the above table, suggests that 1 Kṣaṇa of Nyāya-Vaiśeṣika is equal to 2/45 of a second. The astronomers were fully acquainted with a much smaller unit of time. The truṭi of astronomers measures about the thirty four thousandth part of a second. Dr. Seal observes—"This is of special value in determining the exact character of Bhāṣkara's claim to be regarded as the precursor of Newton in the discovery of the principle of the differential calculus, as well as in its application to astronomical problems and computations".[1]

Differences Between Kāla, Dik and Ākāśa

Though the conception of time is very akin to the conception of space, yet the two entities can be clearly distinguished. The difference between time and space is slight but obvious. Time is the cause of temporal priority and posteriority whereas space is the cause of spatial priority and posteriority. The limiting adjuncts which bring diversifications in time are some sort of action, whereas the limiting adjuncts in case of space are contact with objects.[2]

Another distinction between time and space is that the time is constant.[3] For example, when a span of time is determined as present with reference to a particular event, it always remains so. But the relations of space change and do not remain constant. For instance, a particular span of space which is eastward of one thing at a time, might be westward of the same thing at another occasion or of another thing at the same time. This clearly suggests that the divisions of time are absolute whereas the divisions of space are com-

1. The positive sciences of the acient Hindus—PP-76-80.

2. S. C.—Janyamātraṁ Kriyāmātraṁ vā Kālopādhiḥ.
Murtamātraṁ Digupādhiḥ.
(quoted by Athalye and Bodas—Pg. PP-132-133).

3. SDS—Page 104 (Cal).

paratively relative. But the above contention is not absolutely correct. Time is as relative as the space itself. The same event is past with reference to a particular moment, is present or future with reference to another moment. Thus the above distinction is not conclusively established.

Nyāya system has clearly distinguished between Dik and Ākāśa. Ākāśa is Bhūta Dravya while Dik is not. Ākāśa is the material cause of sound but Dik does not possess such quality. Dik like Kāla is the cause of all effects but Ākāśa is the cause of a particular effect. Thus Naiyāyikas have clearly distinguished between these two entities. The Naiyāyikas recognised Ākāśa and Dik as separate entities as they could not reconcile the material cause of sound (Ākāśa) and the general cause of all effects[1] (Dik).

Whether or not Ākāśa is Space

In Vaiśeṣika Philosophy, a distinction has been shown between Ākāśa and space. Kanāda has tried to show that Ākāśa is not in any way associated with the substratum of free movement. Thus on the basis of free movement, the existence of Ākāśa cannot be inferred. Ākāśa being an all pervasive substance is static, hence it is incapable of becoming the substratum of movement. Movement always inheres in moving substance. It is not even the non-material cause as it is decidedly a substance and a non-material cause is always a quality or action. Besides, it cannot be said to be nimittakāraṇa also. Ākāśa as the cause of movement can be conclusively proved only when agreements in presence and absence with effects are shown. But Ākāśa being an ubiquitous substance is present everywhere hence agreement in absence cannot be thought of. Thus we cannot hold that movement is not possible in absence of Ākāśa. In absence of tangible objects, anything moves

1. PP Bh—page 22 (quated above).

freely. Thus the real obstruction is tangible bodies and not the Ākāśa.[1]

Nyāya-Vaiśeṣika undoubtedly admits the non obstructiveness of Ākāśa but that is due to superlative magnitude.[2]

The real point of distinction as is pointed out lies in the Vaiśeṣika conception of Ākāśa as the material cause of sound. The difficulty alleged to accrue from the ubiquity of Ākāśa is common to Dik also. The agreement in absence is an obstacle to the determination of causal relation is not peculiar to these categories but also to other ubiquitous substances like the soul or Ātman as conceived by the Vaiśeṣika. The difficulty caused by the lack of this criterion is avoided by Vardhamāna on the basis of numerical difference. Thus an ubiquitous substance is regarded as the cause of an effect on the ground that the latter does not occur in any other substance. The affiliation of psychical events to the soul as its condition is capable of being established only by this method. The soul is not only ubiquitous but also permanent. We find that there is the soul and there is act of knowing, it is their concomitance in agreement but it is not possible that the soul is ever to cease to be. So it is not possible to observe the absence of the soul. For instance, knowing is not found to occur in space, time or in any external objects but only in the soul. This constitutes the numerical difference of the soul with other things followed by the absence of knowing. How can the latter be regarded as the effect of the former ? This difficulty is avoided by making the method of difference understood as a case of numerical difference. Knowing, feeling etc. are affiliated as effects to the soul on the ground that they are not capable of being predi-

1. VS—II. 1. 20–23 & also V. up. on it. Niṣkramaṇaṁ praveśanamityākāśasya liṅgam.
Tadaliṅgamekadravgatvāt Karmmaṇaḥ Kāraṇāntarānuklṛptivaidharmyācca. Saṁyogādābhāvaḥ Karmmanaḥ.

2. NBh—IV-11. 22

cated of any other substance. Vardhamāna, therefore, argues that causal relation is thus amenable to the application of both the methods of agreement and difference. This is illustrative of the criteria of causal relation in respect of all other substances which are both ubiquitous and permanent alike.

Dik which is considered as space in Vaiśeṣika system is not really space if by space is meant an expanse, extension or room. In this sense, Ākāśa is the real space which provides room for other objects.[1] The Vaiśeṣika also treats Dik simply as relative positions.[2] It has clearly been stated in Bhāśā Pariccheda that Dik is something like 'gravitating power' if 'gravitation' is treated as an independent reality.[3]

The difference between Ākāśa as space and Dik, is almost like the difference between a wall, on which, and cords, by which pictures may be hung. The wall provides place or room or accommodation and the cords hold the pictures in relative positions.[4]

In fact, the difference of Ākāśa from space is not universally accepted in Indian Philosophy. The Jainas hold Ākāśa and space to be the same.[5] They, of course, believe in two other reals viz. dharma and adharma as the conditions of motion and rest. Of course dharma and adharma are all pervasive so far as the cosmic space (lokākāśa) is concerned in which all particular entities live, move and have their being. The Jainas, however, do not seem to believe with modern physicists that space is of a limited dimension. They believe in extra-cosmic space (alokākāśa) which is however an empty vacuum.

1. PPBH—P 22 line 11; N. K. page 22 line 17.
2. VS—II. 2. 10—Ita idmiti yatastaddiśyaṁ liṅgam.
3. Bh. P-45-quoted above.
4. TS—page 133.
5. Tattvarthasutra-(Bh)—V. 9 Lokākāśasya dharmādhrmaikajiṁ vaistulya.

The Vaibhāṣika Buddhists maintain that Ākāśa is a substance which is unobstructive to and unobstructed by any other object. Thus Ākāśa provides room for material objects.[1] The Sāṁkhya-Yoga system treats Ākāśa as the universal substratum in which all finite objects exist.[2]

It seems that Ākāśa should be at least treated as physical or ethereal space.

Existence of Ākāśa

The existence of Ākāśa is maintained on the following grounds :—

The Paramāṇus are much the same as abstract points. Things of limited magnitude are composed of these paramāṇus. But they cannot produce such limited elements if they actually touch one another as they can only constitute pure points. Things are produced though they remain aloof and apart from one another. They are conjoined together through a medium. There must be an all-pervasive entity to bring union among them.

It is undoubtedly maintained that there should be an all-pervasive continuum to hold these discrete things together. This all-pervasive continuum and universal medium of union of discrete elements is called Ākāśa.[3]

The other argument for the existence of Ākāśa is based on Ākāśa being the substratum of sound or Śabda. Śabda is not a quality of four tangible substances, viz. earth, fire, air and water that are said to possess specific qualities. Then it must be the quality of an intangible substance.[4]

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1. Sphoṭārthā—I. 5-Avakāsaṁdadātityākāśamiti nirvacanam.
2. Tattvavaiśāradi—III. 40.
3. NBH—IV. 2. 2, line 15; PPBH. P. 58 line 16; NK—page 62 line 15; VS—VII. 1. 22. Vibhavānmahānākāśastathācātmā.
4. PPBH—p. 58; NK—p. 59.

Among intangible substances, time, space and mind are not said to contain any specific quality. Thus sound is not the quality of these three intangible substances.[1]

We should now consider whether or not the fourth intangible substance, viz. the soul possesses this quality. Cognition, pleasure pain etc. are the qualities of the soul which are psychical in nature and they are perceived by an internal sense, viz. mind. Sound is a physical quality and is perceived through the external sense-organs. Expressions like 'I am happy' 'I am sorry' point out that mental qualities are invariably attached with antaḥ-karaṇa but the quality of sound is not perceived through antaḥ-karaṇa. Thus sound is not the quaiity of soul.[2]

It seems, therefore, conclusively proved that ākāśa exists as the substratum of sound.

Some Attributes of Ākāśa

We have already seen that ākāś'a is an all-pervasive continuum of discrete things and being a continuum, it should necessarily be eternal, uncaused and indestructible.[3] Ākāśa cannot be produced or destroyed as it is a continuum. for only those things are produced or destroyed which are made up of parts. Thus Ākāśa is eternal.

Ākāśa is motionless.[4] It is an all-pervasive continuum, hence it cannot be supposed to move from one place to another.

Ākāśa is supra-sensible as it cannot be perceived by the senses.[5] Things are perceived by the senses on the basis of

1. Ibid.
2. NK—page 60.
3. PPBH—p. 68, lines 17-19; V. S. II. 1. 28 & V. Up. on it—Dravyatvanityatve vāyunā vyākhyāte.
4. VS—V. 2. 21—Dikkālavākāśañca kriyāvadvaidharmyanniṣkriyāṇi.
5. VS—VI. 1. 6—Mahatyanekadravyavattvāt rūpāccopalabdhiḥ.

some contrast. Contrast means some sort of isolation and distinction. But these two are not possible in the case of Ākāśa, it being an ubiquitous continuum. It cannot be isolated from other things. Thus Ākāśa is supra-sensible.

An objection may be raised against this line of argument on the ground that it will make the soul imperceptible. The soul is admittedly an ubiquitous and permanent substance and as such should be supra-sensible. But the soul is supposed to be perceived by the mind. Does not this constitute a case of contradiction ? The answer of this question may be propounded as follows :—

The soul, that is perceived as "I" is not perceived as ubiquitous substance. It is for this reason, the real soul is asserted to be imperceptible in the Nyāya-bhāṣya. As regards ākāśa or space also, it is supposed to be perceived when enclosed in an object of limited dimension. Thus one may legitimately say that space in the jar is iarge or small. But these are relative properties of space. Such is also the case with the soul. The soul that seems to be perceived is not the true soul, which is eternal and ubiquitous. The Nyāya-Vaiśeṣika like others hold that one will attain final emancipation by realising the true nature of the soul. Our empirical knowledge of the soul is not true appraisal of its nature. Like Kant, they hold that the soul can be known only by some sort of intellectual intuition in which space, time and categories of understanding will not have any place.

CHAPTER VI

The Concepts of Space and Time in the Sāṁkhya-Yoga.

In course of describing the process of evolution, it is said that the manifestation of the latent activity of Rajas is a change or evolution. In the external world, the time that is taken by a Tanmātra or an atom to change its place is equivalent to a unit of change or unit of time. Now an atom is such a fine point that it cannot be perceived by the senses. Thus atoms are considered to be mere points without magnitude or dimension and the unit of time (Kṣaṇa) that is taken in changing the place of these atoms is analogous with one unit of change or evolution. [1] According to Bhikṣu, a moment (Kṣaṇa) is defined as the time which a guṇa entity takes to change its own unit of space.[2] According to him partless units of time can fairly be compared with partless guṇas. At the same time he maintains that there are also atoms of earth, water etc. Yoga-sūtra and Yoga-bhāṣya speak of aṇu and paramāṇu in the sense of earth-atoms etc.[3] Thus it seems that Bhikṣu is not consistent in his interpretation that guṇa refers to atoms. Paramāṇu may, therefore, be taken as material atoms of earth, water etc.

From the analysis made above, it is clear that the change or evolution in the external world may be measured by these units of spatial motion of the atoms. In the mental world, the unit of change is measured by the unit of time corresponding to this change of position of an atom.

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1. YBhā—III 52. yathā'pakarṣaparyantaṁ dravyaṁ paramāṇurevaṁ apakarṣaparyantaḥ Kālaḥ Kṣaṇaḥ.
2. Yvā—III. 51. Sattvādiguṇaviśeṣaḥ paramāṇuḥ.
3. Ysū—I. 40. Paramāṇuparamamahattvanto'sya vaśīkaraḥ; YBhā—I. 45. Pārthivasyāṇorgandhatanmātraṁ sukṣmo viṣayaḥ.

Thus the notion of these discrete moments (Kṣaṇas) is the notion of time. The notion of succession or continuum i. e. one moment following the other, does not possess objective reality. It is an ideal construction; for two moments do not exist together, one moment comes into being only when the preceding moment has passed off. Thus the succession or continuum of these discrete moments cannot be said to possess objective reality. The division of time in hours, days etc. are mental constructions. Ordinary minds cannot comprehend the real aspect of this time and they treat it as substantive reality.[1]

Thus time as discrete moments is the real one and the time as succession or continuum is a convenient fiction. Vācaspati further elucidates it. A moment in association with things seems to be as succession. Succession means the relation of antecedence and sequence between two moments. But only the present moment exists and the past and the future moments are included in it as potential and sublatent phenomena. Thus there are no preceding or succeeding moments. The whole world undergoes changes in one moment alone. This change is known as change of mark (Lakṣaṇā-Pariṇāma) as distinguished from the change of quality (Dharma-Pariṇāma) or change due to lapse of time (Avasthā-Pariṇāma). In this change, a thing changes from the potential to the actual and from the actual to the sublatent. It is said in Yoga-Bhāṣya, III. 53 : Kṣaṇastu vastupatitaḥ kramāvalambī. kramasca kṣaṇantaryyātma taṁ kālavidaḥ kāla ityācakṣate yoginaḥ naca dvaukṣaṇau sahabhavataḥ. Kramasca na dvayoḥ sahabhuvorasambhavāt. Purvvasmā-duttarabhāvino yadānantaryyaṁ Kṣaṇasya sa kramaḥ. Tasmāt varttamāna eva ekaḥ kṣaṇo

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1. YBhā—III. 52–Kṣaṇatatkramayornāsti vastusamāhāra iti. Buddhisamāhārāt muhurtārhoratrādayaḥ. Sa tvayaṁ kālaḥ vastuśunyo'pi buddhinirmāṇaḥ.

na purvottarakṣaṇāḥ santiti, tasmānnāsti tatsamāhāraḥ. Ye tu bhūtabhāvinaḥ kṣaṇāste pariṇāmānvitā vyākhyeyāḥ tena ekena kṣaṇena kṛtsno lokaḥ pariṇāmamanubhavati. Tatkṣaṇoparuḍhā Khalvamīsarvedharmāḥ. We have already seen that Bhikṣu holds that the ultimate unit of time (kṣaṇa) is that which a guṇa entity takes to change its own unit of space. Thus according to him the whole world is nothing else but a series of Kṣaṇas. But this view may not be confused with the Buddhist theory of momentariness as this system does not admit any other reality but the Kṣaṇas.[1]

Time is nothing but the discrete moments of our relative consciousness. These moments exist in our empirical consciousnes, hence they cannot form a succession or continuum.

We have seen before that change or evolution is intelligible only in terms of these moments (Kṣaṇas). We cannot easily grasp these moments of change but they can be reasonably inferred. In yoga-sūtra, it is said : "Succession involving a course of changes is associated with the moments"[2] A cloth is said to be old only when it has passed through a series of moments.[3] A new cloth becomes old in course of time even if it is kept with good care. This points out the cessation of a course of changes and on its basis the succession of a course of changes can be grasped. Vācaspati holds that the succession

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1. Yvā—III 51—Na Kṣaṇatiriktaḥ Kṣaṇikaḥ padārthaḥ kaścidiśyate taistu kṣaṇamātrasthāyyeva padārthaḥ sarva iśyataiti...
2. Ysu—IV. 33—Kṣaṇapratiyogī pariṇāmāparāntanirgrāhyaḥ Kramaḥ.
3. YBhā—IV. 33—Kṣaṇapratiyogī pariṇāmāprāntanirgrāhyaḥ kramaḥ. Kṣaṇantaryyātmā pariṇāmasyāparāntena avasānena grahyate kramaḥ Nahyananubhūta kramakṣana purāṇatvāvastrasyānte bhavati.

can be grasped prior to a thing is old by the sequence of the subtlest, subtler, subtle, grossest, grosser, gross changes.[1]

It must be mentioned here that different interpretations have been given of the term 'Kṣaṇapratiyogī' occurring in Yoga-sūtra, IV. 33. According to Vācaspati, it means the development of a particular moment or Kṣaṇa (Kṣaṇapracāśraya). But Bhikṣu interprets it in a different way. According to him Kṣaṇa means 'interval' and 'pratiyogī' means 'opposite-of' or virodhī. Thus Kṣaṇapratiyogī stands for without any interval or continuous. He maintains that the change is continuous and not in succession. According to him, there is no interval between the termination of the previous state and the rise of the new one.[2]

The Status of the Past, Present & Future

While refuting the Idealist Buddhists, Vyāsa holds : "The past and the future exist in reality since the qualities of things manifest themselves in these three ways. The future is the manifestation which is yet to be. The past is that form which has already been experienced. The present is that which is still active. If these three did not exist in reality, then knowledge would not have been possible. Knowledge is not possible in the absence of the object of knowledge."[3]

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1. Tattvavaiśāradī—IV. 33—Navasya hi vastrasya prayatnasaṁrakṣitasyāpi cireṇa purāṇatā dṛas'yate. So'yaṁ pariṇāmasyāparāntaḥ paryyāvasānaṁ, tena hi pariṇāmasya kramaḥ. Tataḥ pragāpi purāṇtāyāḥ sukṣma, sukṣamatarsuksmasthūlasthūlatarasthūlatamatvādīnāṁ paurvāparyyanumīyate.

2. Yvā—IV. 33—Kṣaṇapratiyogī kṣaṇasyāvarasya virodhī kṣaṇenapyanantarita iti yāvat.

3. YBhā—IV. 12—Bhaviṣyadvyaktikamanāgataṁ, bhūtvyaktikamatītaṁ, svavyāpāropārudhaṁ vartamānaṁ trayaṁ caitadvastu jñānasya jñeyam. Yadi caitatsvarūpato nābhaviṣyamedaṁ nirviṣyaṁ jñānamudapatsyata. Tasmādatītānāgataṁ svarūpato'stīti.

Thus we find that the past and the future do not exist as continuous before or after but the present exists containing within itself both these two. Though the past appears as non-existent in reality, it is conserved in the present. The present is nothing else but the manifested form of the past. Had there been no past, the existence of the present would have been impossible. The future, which has not yet come into existence, exists in the present in potential form. Had it not been the case, the future never could have come into existence as out of nothing, nothing comes. It is said : Nāstyasataḥ saṅbhavaḥ na cāsti sato vinaśaḥ. Thus the past subsists in the body of the present and the future also exists in the potential form.[1] A no-more is always the no-more of what once was.

From the above analysis, it is clear that the whole world undergoes changes at one point of time and also contains within itself the past and the future history of cosmic evolution. A seer endowed wilh the untainted vision can in one moment perceive the past, present or future or this cosmic evolutionary process.[2] Everyting is in everything as we find in the Sāṁkhya (Yogaj pratyakṣa).

Bhikṣu is of the opinion that the concept of time as moments does not amount to the denial of time. It simply holds that time does not possess objective reality apart from the moment (Kṣana). But moment is real, being indistinguishable from the unit of change.[3] This also is real only at the stage of Savicāra Prajñā (Empirical intuition). At a latter stage of Nirvicāra Prajña (intellectual intuition), reals are appre-

1. Vhā—IV. 12—Yadi tu Vartamānatvabhavat atitanāgatyaḥ asatyaḥ hantabho. Vartamānāsyā-pyabhāvo'tītānāgatatvabhāvāt. Abhāvaviśiṣṭatayātu sattvaṁ trayaṇāmāpyaviśiṣṭaṁ.

2. YSū—III. 53. (quoted above)

3. Yvā—III. 51-Guṇapariṇāmasya Kṣaṇatva Vacanāt.

hended as they are, divested of all empirical relations of time, space and causality.

Nāgeśa is an ardent supporter of yoga view of time. His view is somewhat different from that of Patanjali. He frequently quotes him but interprets his view in his own way. He holds like Patanjali that present is real though not perceived but he proceeds further and says that time has no reality apart from the imperceptible atomic present.[1]

In Sāṁkhya pravacana Bhāṣya, it is said that eternal time and space partake of the nature of Ākāśa. In other words, they are all-pervasive and eternal like Ākāśa. But empirical time and space are produced out of Ākāśa.[2]

In Tattvasamāsa, space and time are conceived as the qualities of nature and to be eternal and all present. In the words of A. B. Keith, "In the empiric world both appear as limited, and are explained in a quite inconsistent way by origination from ether through its conditioning by the masses of corporal nature on the one hand, in the case of space, and by the movement of the heavenly bodies in the case of time."[3]

In Yukti-dīpikā, the view of those is criticised who maintain that the origin of universe is dependent on time.[4] The author of this text boldly denies the existence of time. He maintains that time is conceived for the sake of assigning a limit in the uninterrupted flow of action such as in the beating of pulse etc. Thus it (time) does not basically differ from actions and actions are taken to be the functions of organs by the Sāṁkhya texts. Consequently, this 'time' falls within the domain of organs. The following lines will illustrate[5] :—

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1. VSLM—p. 840.
2. SBhā—II. 12–Dikkālāvakāśādibhyaḥ.
3. Sāṁkhya system – pp. 121–122.
4. Yukti—p. 88.
5. Ibid—p. 158 / 10–12 lines.

Prāgevaitadapadiṣṭaṁ na Kālo nāma kaścit padārtho'sti,
Kiṁtarhi kriyāsu Kāla saṁjñā.
Tasmāt karaṇa caitanyapratijñaḥ kalātmaka iti.

The author of this text further asserts that time is not a factor which brings any change in any entity. It simply helps in such change by means of its relation. He says : Kālastu sambandhamātropakāri na vikriyāhetuḥ.[1]

The Concept of Space.

Like time, space also is not a reality beyond us. It is a necessity of human thinking. In the words of Dr. Seal : "Space must be distinguished as Deśa (Locus or rather extension) and Dik (relative position). Space (Dik) as the totality of position, or as an order of co-existent points, is wholly relative to the understanding, like order in Time, being constructed on the basis of relations of position intuited by our empirical or relative consciousness......On the other hand, Space as extension or a Locus of the finite body, Deśa, has an alternate unit, being analysable into the infinitesimal extensive quantity inherent in the Reals (Guṇas) of Prakṛti."[2]

The above contention tacitly implies that Dr. Seal is of the opinion that Sāṁkhya-Yoga assigns some sort of objective reality to Space which is wholly denied to time. But such contention is not tenable as the Guṇas are the constituents of mind also and extension cannot be assigned to it. Besides, the idea of Space is possible only as an order of co-existent points. Lastly Sāṁkhya-yoga texts assign the same status to both these principles. It is plausible to hold that the idea of Space is a development of bare notion of externality, this externality becoming extension because diverse and rapidly succeeding impressions are felt to be co-existent.[3]

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1. Yukti—p. 89/ 7–8 lines.
2. Yvā—Guṇaprakṛteraṇupariṇāmaḥ.
3. A Study of Yoga–Ghosh—p. 255.

Time And Space As Conditioning Factors

From the standpoint of the guṇas, there is no basic difference among the things but they differ according to space, time, form and causality. Thus the evolutionary process is determined by Space and time etc. It is said that the same fruit undergoes different changes according to time and place etc. Yoga-Bhāṣya says, "Two Amalak fruits having the same characteristic, develop in a different way as they are situated at different points of space. The difference in situation helps us to distinguish them as this and that. In the state of inattention, it is not easy to distinguish between two Amlaka fruits even if, one is brought from a distant place. But right knowledge helps to discern the distinction between the two.'[1]

It is said in Tattvavaiśāradī : "In snmmer there is no rain hence no paddy grows in that season."[2]

Thus we see that time, Space etc. are conditioning factors which influence to a great extent the varying changes and growth. In a way, they guide the entire evolutionary process. Other factors remaining the same, two Amalaka fruits differ in some respect due to different points of space; here the operation of cause is conditioned by space. In the other illustration given above, it has been pointed out that the operation of cause is also limited by time.[3]

The Nature of Ākāśa (Space)

The Sāmkhya-Yoga system maintains ākāśa to be an all-pervasive and non-obstructive entity. It is the universal substratum in which all things exist and move freely.[4]

It seems that the postulation of ākāśa as the medium of free movement is a necessity. This contention is criticised

1. YBhā—III. 53.
2. TV—III. 14.
3. TV—III. 14.
4. TV—III. 40.

by the Nyāya-vaiśeṣika system. But there is a general agreement among the Indian philosophers on treating ākāṣa as a locus of all elements.

According to Bhikṣu, there are two kinds of ākāśa-Kāraṇa (Primal) and Kārya (Atomic)

Kāraṇa ākāśa is identical with the undifferentiated Tamas which cannot manifest itself in sounds. But this Kāraṇa ākāśa grows into Kāryākāśa which has the quality of sound. Kāryākāśa is not a mere nothing, but it is an all-pervasive entity, almost analogous with the ethereal space of the modern physicists.

Bhikṣu asserts that Dik and ākāśa are not separate entities.[1]

A Critical Estimate

Yoga view of time given above implies that the nature of time varies according to the objects considered by our mind. The time that is found outside has no separate existence. It is a mental construct. Mathematical time is a creation of ours.

The author of the Yuktidīpikā denies the existence of time and identifies it with action or function of organs. Perhaps he refers to Physiological time which is different from Physical time. Physiological time is the expression of the changes of body and its activities during the course of life. Some of these changes are rhythmic such as the pulsation of the heart. The movement of the organ itself is physiological time.

This physiological time cannot be properly measured in terms of solar time. Events, of course, are measured in forms of days and years for the sake of convenience. But this method does not apply to the rhythm of organic processes which constitutes intrinsic time. In fact, chronolgical age is not analogous with physiological age. Puberty is attained by different individuals at different ages. It is the same with

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1. Yva—III. 51...... Digākāśayorekatvaditi dik.

menstruation. True age is determined by organic and functional states. Some remain young for many years while the organs of other decay early in life. Thus physiological time depends on inner organic processes and it cannot be expressed in terms of extrinsic time.

CHAPTER VII

The Concepts of Space and Time in the Mīmāṁsa.

There is an element of time in action. The action is in a way determined by time.[1] While interpreting Vedic hymns, it has been said that if the hymns are correctly recited, they refer to the laws of time or life.[2] The law of life is common to all animals and this law is not conditioned by time and space.[3]

It is said in Jaimini Sūtras that Time is not the cause of the result of action. It is the effort which brings result. Śruti never refers to time as the chief cause, for a result never occurs simply due to the passage of time. In certain cases only reference to time may be made. If even after putting for the sincere efforts, one fails to achieve result, we can attribute the failure to time. Decay, dealh, etc. are caused by time. In ancient conception, time is associated with decay, death and failure. Thus the function of time is to change anything to worse. This text clearly says that everything happens due to the impelling force and time is not connected with it.[4]

The idea of change is associated both with Nature and time.[5] The idea of time arises when something new comes into being. The word 'immeasurable' occurs in the text, which always refers to time or we might say that time itself is immeasurable as it is beginningless and endless. The idea of the birth of a son in Śruti refers to the fact that time can be divided and subdivided. The instrument of intellect gives us

1. J. S. II. 4. 27—Sārasvate vipratiṣedhādyadettsyāt.
2. Ibid. III. 2-11.—Sūktavāke ca kālavidhiḥ pararthātvāt.
3. Ibid. III. VI. 21—Tenotkṛṣṭasya kālāvadhiriti cet.
4. J. S.—II. 3. 28-41.
5. Ibid—V. 4. 22-24.

the proper idea of time, thus through the characteristic of soul we get the idea of time.[1] Prof. Thadani says : "It may be of interest to point out that the ancient divisions of time into Yuga, Manvantara, and Kalpa all refer to the exercise of our mental faculties. For instance, the word Yuga is derived from Yuj, one of the meanings of which is "to fix or concentrate the mind." The word Manvantara is derived from Manu, which is the same as Manas or mind; while one of the meanings of the word 'Kalpa' is research or investigation. Indeed the word 'Kāla' for Time is itseif derived from Kal, which means "to perceive, consider." Hence we might say that the idea of time involves a proccss of thought or a function of the intellect or the mind.[2]

Orderly arrangement of things or the succession of events give us an idea of time. The appearaace of a new thing or the birth of a son refer to the orderly arrangement of things in the world. Thus the idea of time can be had only through the succession of events.[3]

The Mīmāṁsā holds that time cannot be personified as God, for God creates and sustains the universe. But time is not always conceived like this. Sometimes it is treated as the greatest destructive force.[4] Such concept of time is found in other sacred books also. It may be argued that the time be treated as God at least at the beginnining of things (Preliminary sacrifice). The simple reply to this is that at that stage, time cannot be conceived at all. Thus it cannot be personified as God even at that stage.

Time acts upon everything of the universe after the life begins but it itself remains unaffected. Thus it is said to exist

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1. Ibid—VI. 4. 35-42.
2. Mīmāṁsā—p. 139.
3. J. S.—VI. 4. 43-47.
4. Ibid—IX. 2. 52-60.

for other things and not for itself.[1] It may be compared with the Prakṛti of Sāṁkhya.

About division of time, it is said that it is like curdled butter which partakes of the nature of both the butter and curd yet the two can be separated. Likewise, Time is divided yet it is a continuous whole.[2]

The uninterrupted flow of time is like one desire succeeding the other in an endless chain, hence Time is represented in terms of two successive desires.[3] This aspect of time can be compared with the concept of time of Whitehead.

It has been stated that desire arises when the mind begins to function hence the idea of time is associated with desire.[4]

The Sūtra clearly holds that Time cannot be said to be the cause of creation. The above contention is supported by the gītā where it is maintained that the creator is the God.[5]

While interpreting the words of the sacred text, it has been said that the number twelve refers to time.[6] Prof. Thadani holds : "As time too refers to the sun, and may be said to be a radiation from it, the number twelve also refers to Time. It will be found on examination that it constitutes the basis of the calculation of the time of day and night, the months of the year, as well as the great ages of Time,—all of which are multiples of the number twelve."[7]

The idea of time is closely associated with Prakṛti as both of them represent change. The text says dvādaśa-śatam which may mean 112 and 1200. These two numbers either refer to

1. Ibid—IX. 2. 58-60; X. 6. 3.
2. Ibid—X. 6. 64.
3. J. S.—X. 8. 69-70.
4. Ibid—XI. 2. 20-22.
5. Gītāī X. 7. or J. S.—XI. 3. 46-49.
6. Ibid—XI. 4. 19-20.
7. Mīmāṁsā—p. 377 n.

Prakṛti or to passage of time.[1] The ancients have divided Time into Yugas, Manvantaras and Kalpas. The Yugas are said to be four in number, the entire duration of these Yugas make a Manvantara and a thousand Yugas constitute a Kalpa.

The four Yugas are Satya, Tretā, Dvāpara and Kali; their duration is said to be 1,728,000, 1,296,000, 864,000 and 432,000 years of men respectively. On a searching analysis, it will be found that these figures are the multiples of 1200, which may be said to refer to Prakṛti or Time. The number 1200 is itself based on the number 12, which really represents Time or Prakṛti.

The two schools of Purva-Mīmāṁsā-Prabhākara and Kumārila—admit that substance is that in which quality resides and they treat time and space as substances.[2]

The Ślokavārttika is a commentary in verse by Kumārila on the first Pāda of the first chapter of Śabara Bhāṣya. This is an important work of Kumārila. This text says that Kāla is one, eternal and all-pervasive.[3] Time, though all-pervasive, is conditioned by extraneous adjuncts. In empirical usage, different divisions and subdivisions are made.[4]

The Tantravārttika is another commentary in prose on Śabara Bhāṣya which describes the characteristics of Kāla thus–

"Kāla etc. are all eternal like the Veda."[5]

Prabhākara also treats Time as one of the eternal substances.[6]

Direct Perceptibility of Time (Kāla)

Prabhākara holds that Ākāśa and the rest (including time)

1. J. S.—VI. 7. 15-16.
2. Prakaraṇa—pp. 24, 54, 77, 84;
   Māna page 149–Parimāṇaguṇādhāram dravyaṁ dravyavido viduḥ.
3. ŚV—page 806. Kālaścaiko vibhurnityaḥ pravibhakto'pi gamyate.
4. Māna—p. 191.
6. TV—page. 236.
6. Prakaraṇa—p. 84.

cannot be perceived as they cannot be seen or touched or heard. It should be borne in mind that Prabhākara considers some degree of magnitude along with colour and touch etc., as a necessary condition of proper sense perception. Time, though possessing large dimension, is not perceptible as it is devoid of colour and touch.[1] This contention is supported by the Nyāya-Vaiśeṣika also. The views of this system have been elaborately discussed in the previous chapter.

Bhaṭṭa holds that if Time etc., were not perceptible, then their existence would not be established, as there is no means of valid knowledge except perception. The opponents argue that their existence can be inferred on the basis of specific quality possessed by them. Time is inferred from the concept of simultaneity etc. To this, the Bhaṭṭa Mīmāṁsaka replies that time cannot be inferred on the basis of simultaneity etc. As these probans (hetu) have time as their content. If time is the content of the notions of simultaneity etc. they are produced either by the sense organs or by a probans. They are not produced by a probans (liṅga) as no probans except simultaneity etc. is admitted by the Nyāya-Vaiśeṣika. If the notions of simultaneity etc. are probans, they are self-dependent (ātmāśraya). If they are produced through sense organs, then time becomes perceptible as these notions have time as their content. Further it is held that the concepts like 'It is now morning time', 'It is now evening time', clearly prove that they are produced by the sense of sight, assisted by the sight of sunrise. So time becomes perceptible and is perceived by six sense organs.[2]

Further absence of colour in time does not prove that it is imperceptible. In fact, it is just a chance that some objects, which are perceptible, possess colour and others are devoid of it. Thus the contention of the opponent suffers from the fallacy of false generalisation.

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1. Ibid—pp. 24–26.
2. Māna—pp. 189–190.

In this way, the Bhaṭṭa Mīmāṁsaka has established the perceptibility of time.

The Concept of Space (Dik)

Jaimini has not discussed seriously the problem of Space. It is vaguely referred to as one of the substances. The nature and function have not been elaborated. Jaimini simply tells us that when words refer to these substances (including space), it is necessary to break them up into parts as they are framed in that manner. It has been made clear in the text that a number of words are newly coined for the purpose. [1]

Kumārila holds, on the authority of the Vedas, that auditory sense returns to its primary condition, viz. space (Dik). It is implied therein that the auditory sense is constituted by space or Dik (which is its primary condition).

Further it is held that the space (Dik) is all-pervasive and unitary and it extends as far as Ākāśa itself. But when it is limited within the region of ear, it is transformed into the "Auditory sense"—just as Ākāśa is admitted to be (by the Vaiśeṣikas). Kumārila emphatically asserts that his doctrine is supported by the Vedas hence it is more authentic than the theory propounded by the Vaiśeṣikas which holds that auditory sense is a part of Ākāśa. [2]

Space, though all-pervasive and unitary, is limited and divided on account of extraneous adjuncts like before, behind etc. [3]

Kumārila also maintains that Ākāśa and Dik etc. are eternal like the Veda. [4]

In the Prakaraṇapañcikā, among the eternal substances, Dik or Space has also been enumerated. [5]

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1. J. S. X. 3. 68–70.
2. ŚV—Tejaḥ Prakṛtivijñānaṁ.........nabhobhāgaprakalpane.
3. Māna—p. 191.
4. TV—p. 236.
5. Prakaraṇa—p. 84.

Thus both these schools of Prabhākara and Kumārila consider Dik or Space as eternal substance.

Direct Perceptibility of Space

Śālikanātha, representing Prabhākara's view, holds that like time, Dik or Space is also imperceptible, though possessing great dimension. Space is devoid of colour and touch which are necessary conditions of perceptibility. [1]

Nārāyaṇa, representing the view of the Bhaṭṭa School, demonstrates that space is also perceptible like time. He says that the cencepts of before, behind etc. are dependent on the sense of sight and have space or Dik as content. The inference of Space is as ridiculous as the inference of jar etc. when they are before our very eyes. [2] Pārthasārathi Miśra contends that space and time are perceptible as the qualification of other substances. [3]

Thus Bhaṭṭa Mīmāṁsakas emphatically assert the perceptibility of space as well.

The Nature of Ākāśa or Space

The text also distinguishes between Dik and ākāśa like the Nyāya-Vaiśeṣika.

Śālikanātha, representing Prabhākara's views, holds that ākāśa is inferred as the substratum of sound, for sound cannot belong to the source from which it originates and the organ of hearing can never reach the source of sound. [4]

According to Kumārila, Ākāśa is eternal, indivisible and all-pervasive. [5] He refutes the position of Śaṁkara who holds :

1. Prakaraṇa—pp. 24–26.
2. Māna—p. 190. Evaṁ diso'pi.........nena nirākaraṇiyam.
3. Śāstradīpikā—pp. 140, 145, 146.
4. Prakaraṇa—p. 145.
5. Māna—p. 186. Svarūpāṇi nirūpyate Vyomādīnāmataḥ Kramāt. Nityāni cānavayavadravyāṇi ca vibhūni ca.

"Ākāśa was produced from the soul." In the Mānameyodaya it is said, "The substances (including Ākāśa) are eternal, because they are indivisible substances like Soul." [1] The conflict with the scriptural passages is due to the fact that the meaning of scriptural passages is unintelligible in their literal sense.

Dircct Perceptibility of Ākāśa

Prabhākara mantains that ākāśa cannot be apprehended by the sense of sight as it is devoid of colour. If it had colour, it would also be tangible, as colour and tangibility go together. The apparent whiteness of ākāśa is due to the particles of fire hanging in atmosphere, while darkness is neither a quality nor a substance and therefore must be deemed to be absence of light. It is never a positive entity. [2] Nyāya also supports this contention. Thus ākāśa is imperceptible according to Prabhākara.

Kumārila does not accept the position of Prabhākara. He holds that if ākāśa is not admitted as perceptible, then its very existence will be destroyed as there is no other valid means of knowledge to apprehend it. [3] To this, Prabhākara replies that sound is a specific quality and a specific quality is unintelligible in absence of any substratum; ākāśa results as its substratum. Thus Prabhākara proves that the existence of ākāśa can be established on the basis of inference, which is definitely a valid source of knowledge. [4]

Kumārila says that sound as quality is itself unintelligible and even if it is admitted as a quality, it does not prove the

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1. Ibid.
2. Prakaraṇa—p. 143.
3. Māna—p, 187. Vyomakālādis'āmādau pratyakṣatvaṁ samarthyate. Aniṣṭaṁ Bhaṭṭapādoktimā–dhuryānabhilāṣiṇām.
4. Māna—page 188. Śabdasya Viśeṣaguṇatvāt guṇasya ca guṇināmāntareṇānupapatteḥ śabdaguṇāśrayatvena tāvadākāśasiddhiḥ.

existence of ākāśa for the law of parsimony suggests that it is better to assume a further quality in an established substance than to assume a non-established substance. Further he emphasises that it is universally admitted fact that ākāśa is perceptible. [1] The inferences that seek to prove its imperceptibility are not valid, since they are contradicted by presumption.

Ākāśa and Sound

Prabhākara, like Vaiśeṣika, treats ākāśa as the substratum of sound. He does not see any ground to give to sound the status of a distinct substance. He reduces sound to mere quality, which resides in a substance. But Kumārila and his followers maintain that sound is a substance. It can never be a quality as it is apprehended independent of the substratum. It is the characteristic of a substance that it is independently and directly perceived and also can exist as self-subsistent real. Thus Kumārila concludes that it is more reasonable to hold that sound is a substance rather than a quality. [2]

The position of Prabhākara that sound is a quality seems to be inconsistent as sound and words occupy an important status in Mīmāṁsaka texts. Prabhākara seems to be influenced by the Naiyāyikas who have taken great pains to refute the position of Mīmāṁsakas regarding sound.

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1. Māna—pp. 188-189.

2. Māna—p. 218. Viyadguṇatvaṁ śabdasya kecid ūcur maṇiṣiṇaḥ. Pratyakṣādivirodhāt tad Bhaṭṭapādair upekṣitaṁ.

Tatra guṇasya sarvatra Sāśrayatayā pratiyāmā-mānatvād iha......ca nirāśrayatayaiva pratītidarśanāt pratyakṣavirodhāḥ... Śabdo dravyaṁ sattve satyanāśrayatvāt gaganavat.

CHAPTER VIII

The Concepts of Space and Time in the Vedānta

The process of creation as shown in the Brahma Sūtras points out that the world is in time.[1] The essential characteristic of time is succession and sequence. The stages indicated in the creative process involves succession. This succession implies that world must be in time. As Brahman is the prius of the universe, creation is necessarily an event in time. The creation and the dissolution of the world are a temporal series.

The migration of the finite soul from one body to another till it attains emancipation envisages temporal sequence. The experiences gathered by this finite soul in each birth and the death is an event in time. All the Vedānta Schools agree on one point that the liberated soul is beyond the domain of temporal world. Thus the world and the finite souls live, move and have their being in time.

Now a pertinent question arises, as to how can an eternal and changeless Brahman be held to be preceding the world. Precedence is a time-relation. If Brahman precedes the world and brings it into existence at certain point of time, Brahman cannot be above time and cannot be called eternal.

The word 'eternal' is used in various senses. Eternal means existing for an unending span of time. Sometimes this word is used in the sense of timeless or above time. Sometimes it is taken as transcending time yet somehow including it.[2]

Vedānta texts have made a distinction between self-contained Brahman and Brahman who creates this world. Brahman

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1. Brahma Sūtra—II. 3. 4. & II. 3. 14.

2. Pringle Pattison—The Idea of God. p. 343.

as the originating principle is said to be at the further end of the time-series which is the world. Thus an attempt has been made to reconcile the eternal character of Brahman and the temporal world created by him. Thus Brahman is eternal in the third sense of the term as shown above. Brahman is above time, yet somehow is included in it (time).

Advaita Vedānta emphasises complete identity between the world and Brahman, hence it denies the reality of the finite world of time and space. Māyā explains the existence of temporal and spatial world.

But the existence of this physical world cannot be denied easily. Besides migration of finite souls is there. These two compel us to admit time as a reality. Brahman is eternal in the sense that it endures for an unending span of time.

It may be borne in mind that the whole world is a process in time. The temporal order of the world is in Brahman. Thus Brahman is above and yet somehow includes it (time).

In Advaita Vedānta, Brahman is the highest reality. Brahman is said to be non-temporal, non-spatial and non-causal. Space, time and causality are taken to be the categories of empirical knowledge. These categories presuppose manifoldness which is a product of Avidyā. Avidyā itself is at the root of all empirical knowledge. [1] Thus time, space and causality possess empirical reality only. These categories have sway over empirical objects. Brahman transcends these categories. Hence time does not apply to Brahman.[2] Brahman is eternal. It is the timeless reality. It transcends the past, the present and the future. Thus it is non-temporal or timeless. [3] Though Brahman is the ground of spatio-temporal world of names and forms yet it is different from it. As

1. ŚB, Mānḍ K.—II. 14. Bāhyānām anyonyaparicchedyatvam.
2. ŚB, Mānḍ K.—III. 2, 19, 20, 24, 27, 38; IV. 14, 22, 38, 40.
3. ŚB, Mānḍ Up. I. 1; ŚB. Kaṭha. Up. II. 1. 5.

all mutations are differentiations of names and forms. Thus Brahman is above spatio-temporal sequence. [1]

Citsukha, a great exponent of Advaita Vedānta, has elaborately discussed the problem of time.

While refuting the existence of time, he holds that time, cannot be perceived by the visual or tactual sense as it is devoid of colour and touch. It cannot be perceived even through mind (manas) for mind operates only in association with the external senses. It cannot be even inferred in absence of perceptual data. [2]

Time cannot be inferred as the substratum of the notions of priority, posteriority, succession and simultaneity, quickness and slowness as these notions are not apprehended always and at all places, which should have been the case. [3] It may be urged by the Naiyāyikas that the entity, which establishes relation between the solar vibration and the worldly things, is called time. [4] Citsukha replies that all-conscious self is the cause of the manifestation of time in things and events, hence it is needless to assume the existence of a further substance called time. The notions of priority and posteriority also donot presuppose time. These notions are associated with the larger or smaller quantity of solar vibrations. Thus it is useless to admit time as a separate category. [5]

The Upaniṣads deal with the problem of time and speak

1. ŚBS—IV. 3. 14. Na deśakālādivaśesasaṁyogaḥ paramātmanaḥ kalpayituṁ śakyate.
2. Dravyagrāhakyoścakṣusparśanayostasmin rupavirahiṇi sparśavidhure cāpravṛtteḥ manasaśca bāhyendriyanirapekṣasya bahirpravṛtteḥ, ananubhavācca–CitsukhI. p. 510.
3. Parāparayaugapadyāyaugapadyacirakṣiprapratyayāḥ pratyekaṁ liṅgamiti cet, na; teṣāṁ nirupādhikakālanibandhanatve pratyayavailakṣaṇyānupattiprasaṅgāt. Ibid.
4. Ibid. p. 511 (Vallabha's view of time).
5. Citsukhī—pp. 513-514.

about the origination of time. Brahman has been shown to be the creator of time. [1] Thus these scriptures maintain that the existence of time is simultaneous with creation. According to Advaita Vedānta, time is always associated with the events. Time does not enjoy any independent and absolute status. It is dependent on occurring events. Śaṁkara clearly maintains—"Time is dependent on the nature of events." [2] Swāmī Vivekānanda, a modern exponent of Advaita Vedānta, maintains—"Time depends on two elements just as space has to be related to outside objects." [3] From the analysis made above, it is clear that Advaita Vedānta does not accept the existence of empty time aloof and apart from the occurring events or change. Consequently time must associate itself with the objects arranged in spatial order or with the space itself. Swāmī Vivekānanda observes—"Time, space and causation cannot be said to be independent existences. The one peculiar attribute we find in time, space and causation is : they cannot exist separately from other things............" [4] Thus Advaita Vedānta shows the interdependence and inter-connectedness of space and time. This aspect has not been clearly emphasised in other systems of Indian Philosophy.

According to Advaita Vedānta, space and time must be referred to the physical universe, Swāmiji observes—"It (space) has to be connected with some object to have any existence, so also time." [5] To illustrate it, he compares the universe with the form, the absolute Brahman with the ocean and the material objects with the waves. He shows that the difference among the material objects is due to their forms, viz. space, time and causality. He emphasises that the time,

1. Śvetā—6. 2.
2. ŚB.—Muṇḍaka.
3. The complete works—Vol. II. p. 135.
4. The Complete works. Vol. II. pp. 135–136.
5. Ibid—p. 135.

space and causality are solely dependent upon the waves, the material objects. Thus it seems that the Vedāntins were aware of the difficulties involved in admitting space and time as absolute reality, which Naiyāyika realist could not grasp. This standpoint of the Advaita Vedāntins favourably compares with the views of modern scientific philosopher like Einstein.

Advaita Vedāntins deny the direct perceptibility of empty time but at the same time they hold that the present time subsisting in the object as qualifying element is directly cognised by the percipient. [1]

According to Ramanuja, time is among unconscious substances (acit). Time is given a separate status. [2]

Meghanādāri, one of the earliest members of Rāmānuja School, says that time may not be considered as a separate substance. He has tried to show that Rāmānuja also holds such view. He maintains that the notion of time arises from the relative position of sun in the Zodiac with the reference to earth. [3] In the words of Dr. S. N. Das Gupta—"It is the varying earth-space which appears as time, being conditioned by the relative position of sun." [4]

Veṅkaṭanātha argues that the attempt of the Vaiśeṣikas to infer time from solar revolution and to account for the notions of posteriority and priority is not a satisfactory argument. Even if we admit that the relation between solar motions and objects is understood, that will not account for the notions of priority and posteriority. We can utmost concede that there

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1. Dr. Dutta—The Six Ways of Knowing. p. 101.
2. R. B. S. I. 1. 2.
3. Naya-Dyu-maṇi—p. 168. Sūryā-di-sambandhaviśeṣo-pādhitaḥ pṛthivyādideśānām eva kālasaṁjñā (As quoted in A History of Indian Philosophy—Vol. III. p. 349 Dr. S. N. Dasgupta).
4. A History of Indian Philosophy—Vol. III. p. 349 Dr. S. N. Dasgupta.

is a solar motion and the object existing side by side. Nor again can we account for it by the larger or smaller number of motions, because the very notion of large or small number is unintelligible without the notion of time. Kant has shown that counting itself presupposes time determination. So the attempt to deduce the notion of time from number of solar motions and from the notions of priority and posteriority suffers from the fallacy of petitio principii. Moreover if time were to be known by inference, it would become absolutely inconceivable. If experience be the criterion, there is no proof of this hypothesis of imperceptible time. People do not infer time from priority or posteriority. On the contrary as we have just observed, priority and posteriority are temporal determinations. It must, therefore, be admitted that time is a matter of intuition. Time is perceived. It is not, however, held as a subjective mode of perception as has been done by Kant. It is, on the contrary, an objective fact which is known as the invariable adjectival determination of all objects of perception. In perception, it is perceived as moment. In recognition, it is known as a span of time such as days, nights and so on. In recognition, a particular object is known to be identical with one perceived in the past and this presupposes the knowledge of a span of time such as a month or a year.

In this connection, an objection may be raised : how can there be knowledge of a large span of time such as a day or a year ? It cannot be derived from perception, since the latter is always confined to the present moment. Moreover, time being one, identical, eternal entity without a beginning and without an end is of no pragmatic consequence, inasmuch as our perception takes stock of a fragment of time, felt as the present moment. How can there be distinctions of past, present and future in one, eternal, identical entity ? It must be conceded that these distinctions are relative to external conditions such as the movement of the sun. The present moment is understood only in so far as it is associated with a present

fact. In other words, present time can be perceived only as associated with a perceived datum. In modern times, we can know time by perceiving the motion of the hands of the watch. The contention of the Vaiśeṣika that time is always inferred from the movement of an external object, say the hands of the clock, cannot, therefore, be likely brushed aside.

In reply to this contention, it is argued that there can be no doubt about the fact that time is perceived whenever anything is perceived. The movements of the sun or the hands of a timepiece are perceived as associated with time. That time is one, eternal entity is also conceded by the Vaiśeṣika philosophers. These distinctions as past, present and future are determined only by reference to these associated adjuncts. The difference between the position of Veṅkaṭācārya and that of the Vaiśeṣika lies in the consideration that these temporal determinations such as past, present and future are externally imposed on time according to Vaiśeṣika. Whereas according to Veṅkaṭa, they are the natural and inherent transitions of time, which is a dynamic substance. This is also endorsed by Yādavaprakāśa. [1]

Time is constantly undergoing change in terms of moments. But it is not perceivable by itself. It is perceived when it is associated with a perceivable datum such as the movement of the sun. The determinations of time as past, present and future are discernible only when the movement of an external object is perceived. It is contended that there can be no recognition because a span of time is never perceived and recognition has a necessary reference to the past and the present. It cannot again be maintained that the past time, day, month or a year was perceived in the past and is now recalled in recognition, since perception is always of the present moment and not of a large volume of time. The objection is met by the

1. Tattvamuktākalāpa—p. 631. Yadi nitya ekaḥ kālaḥ.........
Yādavaprakāśairabhyupagato'yaṁ pakṣaḥ.

argument that time is perceived along with an adjunct. When recognition takes place, it necessarily takes cognizance of the past time associated with the number of solar movements. We have to accept it on the testimony of our experience that time is perceived along with an object associated with it. The contention of Veṅkaṭācārya is that it is not only the movement of external objects but also time itself are perceived together. The Vaiśeṣika's argument that time is inferred from solar motion and the like is a case of pure non-sequitur. If time is not perceived at all, how can there possibly be the knowledge of the necessary relation of solar revolutions with time? In all inference, the knowledge of universal and necessary concomitance between the probans (middle term) and the probandum (major term) is a necessary condition. Time cannot be known by inference either as a specific entity or as an unspecified cause.

An objection has been raised by the Buddhists [1] that the contention, that time is perceived, is untenable. It is argued that perception other than recognition takes note of the present. But the present cannot be disentangled from the past and the future as has been urged by the Mādhyamika. That present act is indiscernible. For instance, the proposition, 'A man is going' is unmeaning. The ground that has been traversed is not the object of the present act of going and that which has not been traversed is also not its object and in between the area traversed and the area untraversed, there is no intervening point on which the present act can take place. [2] So the present is only an unfounded superstition. With the collapse of the present, the past and the future also disappear. Time thus transpires to be a pleasant illusion of the uninformed mind.

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1. Tattvamuktā Kalāpa. p. 625. Ataḥ kathaṁ kālapratyakṣatvaṁ ?
2. Gataṅ na gamyate tāvat agataṁ naiva gamyate / Gatāgatavinir muktaṁ gamyamāno na vidyate // Mādhyamika Kārikā (Gatāgata Parikṣā).

Veṅkaṭa asks this question—"Who repudiates the perception of the present? If the Mādhyamika does it, we may not be concerned over it since he denies the existence of everything." The doctrine of voidity is, inspite of its ingenuity, an unacceptable position in that it cannot be proved. The Mādhyamika does not believe in the validity of logical proofs and so he cannot be supposed to adduce any evidence in support of his thesis. Nāgārjuna, however, admits only one criterion for determining the question whether the statement is to be believed, namely that it is not self-contradictory. He posits non-contradiction, a negative yardstick, as the ground of acceptance and contradiction as that of rejection of the proposition. He uses the yardstick for evaluation of statements and propositions endorsed by his opponents. But what is sauce for the gander should also be sauce for the goose. If Nāgārjuna is sincere, he must also make the criterion of self-contradiction as the disproof of his own conclusion also. Taken by itself as an objective proposition, the statement "there is nothing existent in its own right" may not be guilty of self-contradiction. But the very assertion of it, exposes the hollowness of the proposition. The sceptic must be confronted with the question—Do you assert this conclusion from your own conviction? If he answers in the affirmative, he must admit that his conviction is true and valid and it is not airy nothing. If the answer be in the negative, the statement unbacked by evidence will have no validity. So the doctrine of absolute nothingness need not cause much concern to a serious thinker.

To return to the point at issue, the intuition of time is denied on the ground that there is no present moment and even if its existence be conceded for the sake of argument, it cannot be an object of intuition because the present is continually receding into the past and it is humanly impossible to lay one's finger upon it. But this objection seems to be naive. How can you deny the present without the knowledge of it?

Have you awareness of present or not ? or Do you think that this awareness though a fact, has no referent, or the referent is an imaginary construction ? The first alternative is untenable. 'I see this' is a meaningful statement. *This* evidently stands for the present. It is sheer dogmatism or ineptitude to dismiss these assertions as meaningless. The second alternative too is equally unacceptable. A cognition or an assertion without an object is an impossibility. The third alternative seems plausible, it does not deny the experience or its referent but regards it as an illusion. An illusion or error is not conversant with an absolute fiction which has never been felt. Error consists in ascribing a predicate to a wrong subject i.e. to say to one, to which it does not belong. But the predicate must have been the datum of a whilom experience. So, on none of these alternatives, the reality of time can be repudiated. Ontologically considered, time must be believed to be one, eternal principle, of which predication of origination or destruction spells self-contradiction. 'Time was not in the past' is a non-sensical statement. It means there was a time when time was not. Similarly with regard to future assertions of non-existence of time e.g. there will be a time in which time will cease to be is a statement on which contradiction is writ large. Time on pain of self-contradiction must be affirmed to be a unitary principle. Of course, time has been made out as a subjective idea and the mode of intuition by Kant. With due deference to Kant, the implication of subjective time is disastrous since it divests all our experience of objective validity and truth. If it is pursued to its logical end, it will inevitably land us in the morass of scepticism.

It may, however, be argued, "well, let time be a reality." But one monolithic time has no practical use. Our ideas of time are expressed in tenses, but a unitary monolithic time cannot account for this usage. Ordinary people are absolutely unconcerned with a metaphysical time which is alleged to be a self-identical principle and as such is unsusceptible to change.

It is, however, the concept of change which makes admission of time inevitable. Unchanging time is only a metaphysical figment which does not avail a common man in interpretation of his experience or in the formation of a plan of action. It is as good as a fiction so far as the common man is concerned.

This problem has been sought to be explained by the postulation of external adjuncts i.e. actions. Actions vary and this variation of actions is a ground of attribution of variation to time. Time is divided into moments, hours, days, months, years and so on and so forth. This is made possible by the association of solar movements with time. But this does not seem to be a satisfactory explanation. The external conditions may differ and they may also stand in relation to time. But time without intrinsic divisions and differences cannot be supposed to be made different by external conditions. Our notions of past, present and future demand an explanation and the change of anything external cannot have any bearing on time unless it were itself possessed of these distinctions. External conditions might only help us to spell out the divisions of time only if they were intrinsic states of the latter. Veṅkaṭācārya, in conformity with the position of the school to which he belongs, accordingly concludes that time is one principle but it is dynamic. It is one entity which is constantly undergoing change.

In this context, Veṅkaṭācārya refers to the Jaina theory of atomic time. According to the Jainas, time is not one entity but a series of atoms. [1] The greatness or smallness of time are accounted for by the number of motions, greater or smaller, which relate to the greater or smaller number of time-atoms. Time, in this view, is not one but an infinite plurality. But Veṅkaṭa urges that it is not necessary to postulate the relation of motion to time-atoms to account for the temporal magnitude

1. Tattvamuktākalāpa, p. 633. Spandasantatisiddhyarthaṁ Kālasyāṇutvakalpanam.

of facts. [1] One time changing every moment can explain the span of life, greater or smaller, of things. Priority and posteriority are nothing but relation of things to a larger or smaller numer of changes occurring in time. This relation is not physical conjunction but one of container and the contained. Time is the receptacle of all things and their changes. It may be supposed that this sort of relation is possible also between time-atoms and changing things. Why should we then reject outright this theory of time-atoms ? The answer is that the postulation of an infinite number of time-atoms suffers from unnecessary multiplication of assumptions. It is simpler and more economical to suppose that one time with its infinite variations and changes accounts for all temporal determinations. It satisfies the Law of Parsimony (Lāghava). As regards the contention that time is not one but many and consists of moments which come into being and perish invariably, which is a position of the Buddhists, it will suffice to say that the concept of perishable time involves the admission of another time in which it perishes. The logical difficulty alleged in the concept of one time accounting for the infinite temporal determination of events, suffers from the logical fallacy inherent in the combination of one and many. If time is one, it cannot be many; if it is many, it cannot possibly be one. But this contention is based upon abstract logical considerations. The very fact of change presupposes not only variation but also the unity of the entity that undergoes change. The Buddhist fluxist who equates change with destruction and denies the possibility of partial modification, is guilty of denial of change. If each fact comes into being and perishes and is succeeded by another fact which is also subject to the same fate, the offshoot will be that there are so many static events and change will be only an illusion. We do not make any gain by postulating an infinite number of time in lieu of one.

1. Ibid—p. 634.

Time accordingly is an eternal unitary principle according to Veṅkaṭācārya. But does not the concept of eternity entail a vicious circle or an infinite series ? What is eternity ? It means existence for all time. An eternal fact is, what exists in all the conceivable divisions of time without lapse. To predicate this attribute in respect of time presupposes the existence of another time in which the time can exist. The second time also, being eternal, will also necessitate the postulation of another eternal time and this constitutes its refutation. But all these consequences are only figments of misunderstanding. Eternity does not presuppose a different temporal background. It only means that it does not cease to exist that is to say, it does not meet with extinction. Time eternal, therefore, means that time is never extinct. There is thus no logical repugnance in the assertion of eternal time. Time is not only eternal but pervades the whole gamut of existence. Time is again the condition of all change. It is the efficient cause of all external changes and the material cause of its intrinsic change. There is again no incompatibility in time being all-pervasive like God. [1] God and time are coeternal and coubiquitous. God exists wherever time exists and time exists wherever God exists. Veṅkaṭa does not think that two eternal and ubiquitous facts cannot stand in relation of mutual contact as the Vaiśeṣikas suppose. The Vaiśeṣika thinks that conjunction is always a resultant of motion and so he denies unconditioned conjunction. But Veṅkaṭa, like the Mīmāṁsists, does not regard this as universally valid. Conjunction is conditioned only when things exist apart from one another and are conjoined by motion of one or both. As regards eternal and all-pervasive entities, they do not depend on an occasional movement for being brought into mutual conjunction.

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1. Tattvamuktākalāpa, pp. 636–37. Ato yatra kālastatra sarvatra paramātmāstīti tasya kālavyāpakatvam.

It has been urged that if time be eternal and all-pervasive, it cannot be regarded as the cause of change.[1] Change is an event and as such must have a cause. The relation of causality can be understood only by the application of Joint Method. But time being eternal cannot be occasional cause of an event. The method of difference is not capable of being applied to time; we cannot say that there is no time, there is no change. Mere concomitance in agreement is of no help in ascertaining the causal relation because the antecedence of time to the effect is eternally present. The answer is that the method of difference (Vyatireka) does not presuppose the bodily non-existence of the cause, a determining factor. It may be ascertained by reference to another fact. An event takes place in time. It is easily understandable that an event cannot come into being, though there may be other antecedent events. The impossibility of conceiving the occurrence of an event without reference to time is the proof of the causality of time in relation to that event.

To sum up : Time according to Veṅkaṭa, is one, eternal, all-pervasive principle, which is the condition of all changes–internal and external. It is an objective fact and has relation to all other facts—eternal and occasional.

Lokācārya holds that time is devoid of Sattva. It is the cause of the transformation of Prakṛti and its different evolutes. It is eternal. It constitutes the body of Īśvara. It assists God in his sport. Time is divided into moments etc. due to its limiting adjuncts.[2] It is the general cause of all effects. Further it is contended that time is eternal in the abode of God but is non-eternal in the world.[3]

The Yatīndramatadīpikā, written by Śrīnivāsadāsa, explains in short the tenets of Viśiṣṭādvaita school. According to

1. Ibid—p. 637.

2. Tattvatraya—p. 74.

3. Ibid. p. 79.

Śrīnivāsa, time is a non-sentient (jaḍa) substance. It is devoid of sattva, rajas and tamas. Thus Śrīnivāsa differs with the view of Lokācārya who maintains that time lacks sattva element only. It is eternal and ubiquitous. But time as effect, which is experienced in our daily life, is noneternal and changing, It is divided into past, present and future. It is the substratum of such notions as simultaneity, immediacy, quickness, slowness etc. It is the cause of 'nimiṣa', 'Kāṣṭhā', 'Kalā', 'muhūrta', 'day', 'fortnight', 'month', season', 'solstice', 'year', and other higher computations. One month of human standard is equal to a day of the manes. One year of human standard is a day of the Devas; their daytime is the summer solstice and their night time is the winter solstice. The four Yugas together comprise twelve thousand years. It further speaks about the Manus. According to this text, Pralayas also depend on time. Time is the material cause of satya, naimittika and prākṛta pralayas. Thus this text has followed the paurāṇic orders for the computation of the Yugas, the manvantaras and the pralayas etc.

Time plays an important role in the cosmic sport (līlā-vibhūti) of Īśvara. Īśvara is dependent on time at this stage. In eternal manifestation (nityavibhūti), though time is present, it does not enjoy independent status. It is subservient to Īśvara.

According to this text, time is perceived through six sense organs. Thus the view, that holds time as inferable, is refuted.[1]

Madhva, the founder of Dvaitavāda, maintains that time is coexistent with all-pervading space. It is directly produced from prakṛti. All other substances abide in it. It is said to be the generic cause of the production of all objects. [2] An objection is raised : if time is directly produced from Prakṛti, wherefrom Mahat etc. would evolve. But this objection is not valid, for it is only from some parts of Prakṛti time is

1. Yatīndramatadīpikā—pp. 75-78.

2. Nyāya Sudhā—II. 1. 6.

evolved, while the other evolutes follow from other parts of Prakṛti. [1] Madhva further maintains that matter, karma, time and nature and souls exist by the sufferance of God and cannot exist independently of Him. [2] He comments—"Time was, souls were, and God was, whatever there was, was there enveloped by God in whose power it was; hence it was (as good as) non-existent." [3]

Vallabha, the propounder of Śuddhādvaita, maintains that real time comprehends existence (Sat) consciousness (cit) and bliss (ānanda). But empirical time is a partial manifestation of existence (sat). Time disturbs the equilibrium of sattva, rajas and tamas. Karma (activity) and Svabhāva (nature) are the parts of time. [4]

Śaṁkara has dealt with the problem of space in a more elaborate way than its twin principle time. He says ākāśa is the first entity in the scheme of creation. The power of God (Māyā) is transformed into ākāśa under His direction. Thus subtle ākāśa is conceived in association with the material bodies. Ākāśa becomes incomprehensible if material bodies are divested of it. Modern physicist like Einstein is of the opinion that we get at the concept of space through the concept of solid bodies. Thus Advaita Vedānta maintains that the creation of world of names and forms presupposes the existence of space as its substratum. In other words, Advaita Vedānta holds that space has a beginning, for it is the first

1. Madhva-Siddhānta Sāra—p. 64.
Sarvatra vyāptānāṁ katipaya-prakṛti-sukṣmānāṁ kālopādānatvam, katipayānāṁ mahad-ādy-upādānatvaṁ katipayānāṁ ca mūla-rūpeṇa avasthānām.

2. Bhāgavata-Tātparya—II. 10. 12.
Dravyaṁ karma ca kālaśca svabhāvo jīva eva ca yadanugrahataḥ santi yadupekṣayā.

3. Madhva, Brahma-Sūtra-Bhāṣya—II. 1. 17.

4. Commentary on Aṇubhāṣya—p. 165.

entity of creation. Space makes possible the existence of other beings of the world. Thus space is the cause of creation. According to this text, space is imponderable, all-pervasive and subtle. [1] Further it is said that origination signifies dependence, finiteness and relative existence in relation to the originating principle (Māyika Īśvara). Space appears as infinite but in reality it is limited. Thus space is finite, dependent and relative. According to this text, a created entity cannot be absolutely independent. It must depend on some greater, higher and stable reality for being reals. Vivekānanda says that a relative entity cannot claim absolute independence. [2]

We have seen that the Upaniṣads uphold the absolute reality of Brahman but some of the Upaniṣads vaguely exalt the infinitude of space and equates this principle with the Brahman. But it should be borne in mind that such text simply point out the immense vastness of space. Besides, to uphold the eternity of Brahman, they compare Brahman with space etc. These texts repeatedly emphasise that Brahman alone is real and infinite and other elements are inter-dependent, finite and relative. [3]

Śaṁkara clearly states that space has also an origination like other created objects. Created objects are divisible, likewise space can be differentiated from earth etc. The divisibility of space proves that it has an origination and it undergoes transformations. Śaṁkara says "The entire universe springs from Īśvara—space being the first and later on the elements in due succession." [4] Śaṁkara always emphasises that space is associated with the material bodies, for he proves its divisibility on the basis of the presence of material bodies in it. Like other systems, Advaita Vedānta does not consider space

1. ŚBS—I. 1. 22.
2. The Complete Works—Vol. II. p. 132.
3. S. U.—4. 8; Ch. U.—4. 10. 4.
4. ŚBS—2. 3. 7.

to be eternal for it has qualities which undergo change and decay. Such a substance can never be an eternal one. This system clearly maintains that Brahman alone is infinite and eternal and other created objects including space are dependent and finite in relation to Him. Śaṁkara says—"The division of space is, however, shown by the earth etc.; therefore space also must be a transformation."[1]

Śaṁkara has tried his best to refute the position of the nihilistic Buddhist that Ākāśa or space is a negative entity. According to him, ākāśa is a positive entity. This view is quite consistent with his theory of creation which holds that the creation of the entire universe follows from the primordial space. Śaṁkara very sensibly refutes the Buddhist standpoint that ākāśa is simply absence of obstruction.[2]

According to Advaita Vedānta, space makes possible the emergence of a material world. It is in a way holdall of all created objects. It is not only a passive container but also an active cause of their origination. The entire universe has come out of it and ultimately merges into it.

According to Rāmānuja, space is identified with ākāśa which is an evolute of prakṛti.

Veṅkaṭa holds that ākāśa (space) is perceived by the visual organ. His argument is based on facts of experience in perceiving a blue sky or a reddish sky in the evening. He repudiates the argument that the ākāśa is only inferred through movement on the ground that the ākāśa exists even in thick walls where no movement is possible. He also disparages the contention of the Buddhists who hold that the Ākāśa is pure negation (āvaraṇābhāva). It is this pure negation which according to Buddhists sometimes produces an illusion of positive entity. It is a fact of experience that negation of pain is taken as pleasure and negation of light as blue darkness.

1. Ibid.
2. Ibid. II. 2. 24.

Thus ākāśa is never a positive entity according to Buddhists. But Veṅkaṭa does not accept the position of Buddhists and adduces powerful arguments in support of his contention that the ākāśa (space) is a positive entity. Negation itself possesses a sort of positivity. [1] It does not basically differ from positivity. A negation is said to be absence of positive entity of which the negation is affirmed. That Ākāśa is a positive entity is proved by its positive experience. The contention that there is no ākāśa in occupied space is misleading, for ākāśa is perceived when the occupation is partially removed by cutting apart the occupying object. The negation of occupation is the predicate which is affirmed of the positive entity, ākāśa. Veṅkaṭa further argues that if the above position is not accepted by the opponent, then such perceptions as 'Here is an object' will become altogether unintelligble, for the word 'here' will have no meaning if it is mere absence of negation. If again, there is an absence of ākāśa in an occupying object, it is implausible to define ākāśa as the absence of such an object, for in that case everything will negate itself, which is an absurd position. [2] It is contended even by the opponents that ākāśa appears as a surface. This points to the fact that ākāśa is a positive entity on which certain qualities are illusorily imposed. Had it been a pure negation, no quality would have been imposed on it. The contention of the Buddhists that negation of pain is falsely taken as pleasure, does not weaken the position of Veṅkaṭa, as negation itself is a sort of positivity. [3]

1. Tattvamuktākalāpa—p. 511. nābhāvasya nissvabhāvatā abhāva svabhāvatayaiva tat siddheḥ svanyasvabhāvatayā siddhistu na kasyāpi; na ca svena svabhāvena siddhasya parasvabhāvavirahādasattvam ! atiprasaṅgāt.
2. Tattvamuktākalāpa—p. 515. natvākāśamātram āvaraṇeṣva avidyamānatayā tadabhāva ākāśa iti cā'yuktam; sarveṣām svasminnavidyamānatayā svabhāvatvaprasaṅgāt.
3. Tattvamuktākalāpa—p. 516. Satyeva duḥkhābhāve sukhāropāt. Abhāvasya bhāvānyatvamātram eva hyasattvaṁ siddham ! tena ca svarūpasannevāsau.

Veṅkaṭa further argues that when it is said that there is no occupation here, the locus must be shown where the occupation is denied. The locus of such negation of occupation is ākāśa (space) itself. He concludes that ākāśa, which is neither eternal nor all-pervasive, is a positive entity.

Dik or directions such as north, south etc., are not different from ākāśa which offers room for moving objects. It is ākāśa which appears as different *dik* (directions).

Śrīnivāsa says that Ākāśa arises from Śabdatanmātra. Ākāśa is that which is the locus of particular sound and which does not possess touch. It also gives satisfaction to the sense of hearing. Ākāśa is perceptible. Its specific attribute is sound and it is the cause of dik (direction). It is perceived thus : 'The sky is blue'. It possesses colour through the quintuplicative process (pañcīkaraṇa). There is no separate substance like Dik (direction); for ākāśa (space) itself is taken as east, west etc. due to the movement of sun. [1]

Madhva holds that ākāśa (space) is grasped by sākṣī or antaḥkaraṇa (consciousness). To illustrate it, he has examined the views of other philosophers.

Kumārila maintains that ākāśa (space) is grasped by the eye. But he is not correct as the eye can grasp only those things which have colour. Ākāśa (space) has no colour and hence it cannot be grasped by the eye.

The Nyāya-Vaiśeṣika holds that ākāśa is the substratum of the quality of śabda or sound. If it is a fact then a man born deaf should have no idea of ākāśa (space). Due to his defective sense-organ, he cannot have the perceptual knowledge of śabda. Thus he should not have the knowledge of ākāśa also. But we do find that such deaf person has the idea of ākāśa (space) because like others he also says 'It is here'. This

1. Yatīndra—pp. 59–60.

statement points out that he also possesses the idea of ākāśa. Further this statement corroborates the fact that ākāśa is grasped by sākṣī.

Besides, there are two kinds of śabda (sound), articulate. and inarticulate. An articulate sound is never a quality. It is said to be beginningless and endless. It is changeless hence it is independent of the thing that makes it manifest. It is admitted that inarticulate sound is a quality. But there is no evidence to show that it is a quality of ākāśa (space).

Madhva distinguishes between Avyākṛtākāśa (unmanifested space) and bhūtākāśa (element space). Avyākṛtākāśa is eternal vacuity. It gives room to all things. Bhūtākāśa is a manifestation of prakṛti. It is one of the bhūtas (substances). Prakṛti itself is in avyākṛtākāśa hence it is the presuppositon of bhūtākāśa. Thus avyākṛtākāśa (unmanifest space) makes possible the existence of all things. The Buddhists hold that ākāśa is the absence of a moving entity. A moving entity exists in a point of space. So its absence also exists in a point of space. Thus the absence of moving entities itself presupposes the existence of ākāśa (space).

Avyākṛtākāśa is eternal but because of the things in it, it is divided into parts such as ākāśa (space) contained in a jar and so on. If the things are removed, the divisions will be obliterated. Thus because of its divisions, it is non-eternal. It is known as eternal-non-eternal (nityānitya). [1]

Vallabha, while interpreting Brahma-Sūtra, comments that from Brahman ākāśa has been produced. [2] Ākāśa can not be perceived through the visual organ. It is known through its specific quality, śabda or sound. Dik is not a separate entity from Ākāśa. [3]

1. Nyāya Sudhā—II. 3. 1.

2. Aṇubhāṣya—p. 61. Janmādyasya akāśasya yataḥ.

3. PRK—p. 209.

CHAPTER IX

A brief survey of the views of modern Scientific Philosophers—Newton, Einstein, Sir James Jeans, Sir Eddington and Alexander.

In the Newtonian scheme, the concepts of space and time are fundamental. But Newtonian concept seems to be more a concept of commonsense than a scientific one. According to him, space has a being of its own and it is completely empty. It is expanded and material bodies exist in it. Space is imagined to be existing prior to the appearance of material universe and is thought to exist even after the disappearance of the material universe. Time is measured by succession of events. But time, in its own nature, seems to be quite independent of events. Time is said to be marching on, even if no event happens in an empty universe. But can we think time to be existing in absence of all world and living beings ? This is not easily answered. But this gives us an inkling that space and time are, in some way, interconnected.

Before the appearance of the theory of relativity of Einstein, it was held that space and time were independent and fundamental realities. Relativity theory changed this notion of space and time and made space and time derivatives of more fundamental reality and also made them relative.

Einstein asserted that our measures of length ānd of time vary with our motion. A stationary observer, as we moved past him with our measuring rods, would remark that our measuring rods had contracted and our clocks were running slow. We would also pass similar remarks regarding their measuring rods and clocks. These strange phenomena were never before observed or it was very difficult to observe as it can be observed only at the fastest speed, speed comparable with the velocity of light itself.

It should be borne in mind that the theory of Einstein is based on observed facts and the previously established theory of the velocity of light. This theory states that the velocity of light remains constant whether observed from a stationary system or from a dynamic one. In other words, the speed of a ray of light measured by various observers, will remain the same, namely, 186,000 miles per second. The motion of an observer does not affect the measurement. If the abovementioned theory is true, it will also be true that space and time are relative. They vary with the motion of the observer. Two events which are simultaneous for one observer, are not simultaneous for another one who is moving with a different speed. Thus different individuals make different estimates of space and time. In the words of Einstein—"It became clear that to speak of the simultaneity of two events had no meaning except in relation to a given co-ordinate system, and that the shape of measuring devices and the speed at which clocks move depend on their state of motion with respect to the co-ordinate system." [1]

The theory of relativity assumes that space is finite but unbounded. It is based on the laws of Reimann's geometry. Modern scientists now unanimously hold that our space is not governed by the laws of Euclid's geometry, but by the laws of Reimann's geometry. It is interesting to enquire into the distinction between the two geometries. It is illustrated by a fact of common experience. Everybody knows that a volume has three dimensions, length, breadth and thickness, whereas surface has only two, namely, length and breadth. Suppose a creature lives only in two dimensions. He is conscious only of length and breadth, he has no idea of up or down. Now if this creature lives on a flat surface, like the surface of a table, he will find that his space (the surface of table) can never be unbounded unless it is infinite. He can

1. Einstein—Essays in Science—p. 56.

only go in a straight line and he will reach the edges of the table and will find that it is bounded unless the length or breadth of the table is infinite. But on the surface of a sphere such difficulty does not arise. A creature goes on and on both in length and breadth but it never reaches the boundaries of a spherical surface. Thus spherical space is unbounded though its area (the surface of the sphere) is finite. It seems quite plausible to hold that space is finite but unbounded. It should be borne in mind that the geometry of a flat surface is Euclidean whereas the geometry of spherical surface is non-Euclidean. According to Euclidean geometry, the three angles of a triangle are equal to two right angles. It is true only when triangles are drawn on a flat surface. But it is not true, when triangles are drawn on a spherical surface. Thus Euclidean geometry yielded place to Reimann's geometry which has been adopted by Einstein with immense success. This geometry shows that two-dimensional spherical space possesses as many properties as are possessed by three-dimensional space, that is, space is finite but unbounded. In this spherical space if we march on and on, we do not stumble on any boundary which may hamper our forward march. But it is significant to note that in such space, we return back to our starting place. It shows that the area is finite.

The theory of relativity gave us a new concept of space, in which space lost its former rigidity and it could possibly take part in physical events. It no more remained a passive container.

According to the special theory of relativity, space and time were shown to be inseparable. Einstein says—"Hitherto it had been silently assumed that the four-dimensional continuum of events could be split up into time and space in an objective manner—i.e. that an absolute significance attached to the "now" in the world of events. With the discovery of the relativity of simultaneity, space and time merged in a single continuum in the same way as the three dimensions of

space had been before. Physical space was thus increased to a four-dimensional space which also included the dimension of time. The four-dimensional space of the special theory of relativity is just as rigid and absolute as Newton's space." [1]

Minkowski holds that the theory of relativity of space and time will look all the more plausible if we regard time and space as being the aspects of a more fundamental reality–the four-dimensional space–time continuum. According to him, space has three dimensions whereas time has only one. This one dimension of time is like the one dimension of length. He illustrates it thus : whenever anybody asks about the time a man's life has covered, he simply means its length divested of breadth and thickness. The three dimensions of space and one dimension of time weld together to form the four-dimensional space-time continuum. Minkowski asserts—"Henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality." [2] Sir James Jeans remarks—"until this time, we had thought of space as something that flowed past us or even through us. The two seemed to be in every way different. We can retrace our steps in space, but never in time, we can move quickly, or slowly, or not at all, in space as we choose, but no one can regulate the rate of flow of time–it rolls at the same even uncontrollable rate for all of us." [3] But Minkowski holds that the distinctions and diversification made in space and time are unknown to nature. Sir James Jeans says—"In other words the continuum is one in which space and time are so completely welded together, so perfectly merged into one, that the laws of nature make no distinction between time, just as, on the cricket field,

1. Essays in Science—Einstein—p. 68.
2. Minkowski's famous lecture to the Eightieth Meeting of the German Scientists and Doctors in 1908.
3. The Mysterious Universe—p. 86.

length and breadth are so perfectly merged into one that the flying cricket ball makes no distinction between them, treating field merely as an area in which length and breadth separately have lost all meaning." [1]

As nature knows nothing about these distinctions and diversifications made in space and time, it is purely psychological. Theory of relativity points out that different observers make different measurements of space and time. There is nothing like absolute space and absolute time. But all agree that there is a certain relation, namely, *interval*, which directly refers to four-dimensional continuum. It is universally admitted to be spatio-temporal relation and is derived by each observer by combining his space and time measurements in a particular way. Observers widely differ on the measurements of space and time separating two events but they fully agree on the *interval* between these events. Minkowski points out that this *interval* is analogous to the mathematical interval for a *length*. But this *length* is in four-dimensional continuum. Observers are unanimous on the measurements which directly refer to this four-dimensional continuum.

Science has used the words space and time in more than one senses. Space is interpreted as follows--

Conceptual space is chiefly the space of abstract geometry. It does not exist outside the mind of the man. It assumes different dimensions according as the human mind conceives. Perceptual space is chiefly the space of a conscious being who is experimenting and recording sensations. Man imagines all objects arranged in a threefold ordered aggregate which we call space. This is created by a man experiencing sensations, and it ceases to exist with the cessation of the sensations.

Sir James Jeans says—"For a one eyed man or one viewing objects so remote that his binocular vision conveys no idea

1. Ibid—p. 89.

of distance perceptual space is two-dimensional at least so long as no sense other than seeing is involved. Thus ancients located the fixed stars on the two-dimensional surface of a sphere. As soon as near objects are viewed by a normal man, so that binocular is employed, or as soon as objects are seen to move one behind another, or as soon as senses other than seeing are employed, a third dimension of perceptual [1] space instantly springs into being." Thus the dimension of perceptual space depends on the percipient.

Physical space is the space of physics and astronomy. Both conceptual space and perceptual space are said to be private, the one being private to the thinking mind and the other to the percipient. Some scientists contend that objects are permanently arranged in space where they live, move and have their being. This may be named public space. Thus physical space is the public space. This concept has been modified by the theory of relativity.

Absolute space is also a physical space which was introduced by Newton. According to Newton, measurements made in *absolute space* remains 'similar and unmovable.' He has distinguished it from perceptual space which he calls *relative space.*

Likewise time also admits of four different meanings.

Conceptual time is such time as exists only in the mind of the man. Such time is usually one dimensional but it may be multi-dimensional according as the thinking mind assigns.

The existence of *perceptual time* depends on the consciousness of the individual and it thrives so long as the individual consciousness remains. Experience of the percipient comes *one after another* hence perceptual time is mono-dimensional.

Physical time is the time of physics and astronomy. Unlike perceptual time and conceptual time, which are private,

1. Physics & Philosophy—pp. 55–57.

it is said to be public. Some scientists hold that events can be arranged one after another. Thus it admits of different measurements of time. But this concept has received certain changes after the appearance of the theory of relativity.

Absolute time is just the counterpart of absolute space of Newton. He holds that absolute measures of time are possible as measures of time remain unaffected by speed of light etc.

Sir James Jeans has examined the various concepts of space and time and has held that in the theory of relativity it is no longer permissible to consider space and time as completely independent, rather there is intimate connection between the two. The theory of relativity clearly explains this connection. Sir James Jeans comments—"Newton supposed that all objects could be located in his absolute space, and that all events, wherever they occurred could be assigned positions uniquely and objectively on an ever flowing stream of absolute time." [1] According to him, this concept does not hold good in the light of subsequent investigation, which has clearly shown that the Newtonian theory does not adequately explain the passage of light and the behaviour of objects moving at a speed comparable with that of light. The theory of relativity shows that physical space and physical time do not enjoy independent status; they seem to be abstractions from space-time continuum which comprehends both.

Before the advent of the theory of relativity, no one could observe the welding together of space and time. Apparently space and time do not appear to be of similar nature. But theory of relativity has welded space and time into one space-time continuum, which is of great philosophical and scientific significance. But it must be borne in mind that the theory of relativity does not identify time and space. But by their

1. Physics & Philosophy—y. 63.

very nature space and time are heterogeneous and their heterogeneity has been pointed out in clear terms by Minkowski, who holds that time does not play the same role as space.

According to Sir James Jeans, each observer carves out, in a certain fashion, his space and his time from space-time continuum, the mode of division depending on his speed of motion. Thus space and time separately are private but the fusion of the two is public.

After a close examination of the basic assumptions of the theory of relativity, Sir James Jeans arrives at the following conclusions :—

It seems extremely difficult to separate space from time but atomic physics or astronomy "may have a different story to tell." Sir James Jeans comments—"The hypothesis that absolute time and space do not exist brings order into man-sized physics, but seems so far to have brought something very like chaos into astronomy. Thus there is some chance that hypothesis may not be true." [1]

The Newtonian concept of absolute space and time receives support from nebular astronomy. If nebular astronomy can find out a way of determining an absolute time, then space-time unity will be divided into space and time by nature itself.

He further holds that the theory of relativity deals with the measures of space and time and it does not clearly tell about the nature of space and time. However, this theory shows that space and time are blended together hence in a way it speaks about the nature of space and time also in a general way.

Conclusively he remarks—"We find there is something in reality which does not permit of representation in space and time. Thus space and time cannot contain the whole of reality, but only the messengers from reality to our senses." [2]

1. Physics & Philosophy—p. 67.
2. Ibid. p. 69.

It seems Sir James Jeans was a protagonist of the Newtonian mechanics. He has accepted very reluctantly the principles of the theory of relativity.

Sir Eddington has made a brilliant exposition of the theory of relativity. He has an ability of mind to grasp the profound implications involved in this new theory. Eddington has not made any major contribution to the fundamental theory. He has just added two or three considerable applications.

In his famous address to Royal Institution, on February 1st, 1918, he introduces relativity thus—"There were many difficulties in entering the room just now. To begin with, we had to bear the crushing load of the atmosphere, amounting to 14 1b. on every square inch. At each step forwards it was necessary to tread gingerly on a piece of ground moving at the rate of twenty miles a second on its way round the sun. We were poised precariously on a globe, apparently hanging by our feet, head outwards into space. And this acrobatic feat was performed in the face of a tremendous wind of aether, blowing at I do not know how many miles a second through us. We do not claim much credit for overcoming these difficulties—because we never noticed them. But I venture to remind you of them, because I am about to speak of some other extraordinary things that may be happening to us of which we are quite unconscious." [1] In this way, he points towards Fitzerald-Lorentz contraction (of space and time) which we ourselves are performing but we are not aware of it.

Eddington holds that suggestion of Fitzerald-Lorentz finds expression in Minkowski's space-time unity. This space-time unity has made possible the idea of different appearances from different points of view. He says—"We cut Minkowski's space-time world in a direction so as to give us separately space and time as they appear to us. We have been imagining that there exists some direction which would separate it into

1. As quoted in British Scientists of the Twentieth Century. p. 166.

a real and absolute space and time. But why should there be ? We do not attempt to cut the space—world in a particular direction so as to give us the real horizontal and vertical. The words 'horizontal' and 'vertical' have no meaning except in reference to a particular spot on the earth. So far a particular observer the space-time world falls apart into its four components, up-and-down, right-and-left, backwards and forwards, sooner-and-later, but no observer can say that this division is the one and only real one." [1] Thus he has tried to dispel the ageold beliefs in absolute space and absolute time.

In his book, Space, Time and Gravitation, he has made an exposition of the theory of relativity with the help of a prologue between an Experimental Physicist, a Mathematician and a Relativist. The Relativist speaks with the voice of Eddington himself. After discussing the different implications involved in the theory of relativity, he arrives at the conclusion that 'space without time is as incomplete as a surface without thickness.'

He further holds that we believed in Euclidean space for 2,000 years because measurements favoured it. But now there should be no hesitation in changing our old concept. Whenever he speaks of space, he simply means 'the space revealed by measurement, whatever its geometry.' He further observes—"The proposal which is made quite unblushingly, is that since measured lengths do not obey Euclidean geometry we must apply corrections to them—cook them till they do. A closely related view often advocated is that space is neither Euclidean nor non-Euclidean; it is all a matter of convention and we are free to adopt any geometry." [2]

Eddington has shown to the belief of the conservative physicists in a pre-existing space, which does not admit of

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1. Ibid.

2. The Nature of Physical World—p. 160.

any experiment, leads them to the field of Metaphysics. Whereas the relativists are staunch realists as they difine space by measuring it.

After the prologue above-mentioned, he has given a clear account of Fitzerald contraction and now its explanation leads to the principle of relativity.

He has described the appearance of an aviator flying past at 1,61,000 miles a second. If he was flying flat in his machine, in the line of flight. "We would see a figure about three feet height, but with the breadth and girth of a normal human being. And the strange thing is that he would be sublimely unconscious of his own undignified appearance. If he looks in a mirror in his conveyance, he sees his usual proportions... But when he looks down on us he sees a strange race of men who have apparently gone through some flattening out process. If the reader has watched a cricket match through a pair of prismatic binoculars, he will have seen this effect exactly." [1] Thus he has tried to show that Fitzerald contraction is a fact though it is not readily believed by many people as they are quite unconscious of it. Einstein has unravelled this tacit truth, not easily comprehensible to many. He maintains that "The most dangerous hypothesis are those which are tacit and unconscious." He has shown that these hypotheses have all along stood in the way of conceiving space and time in simple from.

"Sometimes by instinctive habit, sometimes by design, we attempt to eliminate our own share in the observation, and so form a general picture of the world outside us, which shall be common to all observers. A small speck on the horizon of the sea is interpreted as a giant steamer. From the window of our railway carriage we see a cow glide past at fifty miles an hour, and remark that the creature is enjoying a rest. We

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1. The Nature of Physical World—p. 169.

see the starry heavens revolve around the earth, but decide that it is really the earth that is revolving." [1]

Einstein's theory of relativity has given meaning and consistency to these varied appearances which looked quite inconsistent. Minkowski has given them form in his famous lecture to the Eightieth Meeting of the German Scientists and Doctors, in 1908. 'The views of time and space, which I have set forth, have their foundation in experimental physics. Therein is their strength. Their tendency is revolutionary. From henceforth space and time each separately vanish as shadows and only a union of the two preserves reality.'

Eddington comments on Minkowski's conception—'the four-dimensional world is fibrous, with the threads all running along time-like tracks, it is a tangled warp without a woof.'

Eddington discusses the geometrical character of space. He begins by quoting W. K. Clifford, "that the hypothesis that space is not flat, and again that its geometrical character may change with time may or may not be destined to play a great part in the physics of the future; yet we cannot refuse to consider them as possible explanations of physical phenomena, because they may be opposed to the popular dogmatic belief in the universality of certain geometrical axioms—a belief which has arisen from centuries of indiscriminating worship of the genius of Euclid." [2]

Eddington conclusively remarks that 'there is no *shape* inherent in the absolute world.' He further maintains "Think of matter and energy, not as agents causing degrees of curvature of the world, but as parts of our perceptions of the existence of the curvature."

To explain curvature in space-time, Eddington takes the help of a fable. A race of flat fish once lived in on ocean in which there were only two dimensions. It was noticed that

1. Ibid.

2. Space Time and Gravitation—p. 77.

in general fishes swarm in straight lines, unless there was something obviously interfering with their free courses. This seemed a very natural behaviour. But there was a certain place where all the fish seemed to be bewitched, some passed through the region but changed the direction of their swim, others swarm round and round indefinitely. One fish invented the theory of vortices, and said that there were whirlpools in that region which carried everything round in curves. By and by a far better theory was proposed, it was said that the fishes were all attracted to a particularly large fish a Sun-fish–which was lying asleep in the middle of the region; and that was what caused the deviation of their paths. The theory might not have sounded particularly plausible at first, but it was confirmed with marvellous exactitude by all sorts of experimental tests. All fishes were found to possess this attractive power in proportion to their sizes; the law of attraction was extremely simple, and yet it was found to explain all the motions with an accuracy never approached before in any scientific investigations. Some fish grumbled that they did not see how there could be such an influence at a distance, but it was generally agreed that the influence was communicated through the ocean, and might be better understood when more was known about the nature of water. Accordingly, nearly every fish who wanted to explain the attraction started by proposing some kind of mechanism for transmitting it through water. But there was one fish who thought of quite another plan. He was impressed by the fact that whether the fish were big or little they always took the same course, although it would naturally take a bigger force to deflect the bigger fish. He therefore concentrated attention on the course, rather than on the forces. And then he arrived at a striking explanation of the whole thing. There was mound in the world round about where the sun-fish lay. Flat fish would not appreciate it directly because they were two-dimensional; whenever a fish went swimming over the slopes of the mound,

although he did his best to swim straight on, he got turned round a bit. (If a traveller goes over the left slope of a mountain, he must consciously keep bearing away to the left if he wishes to keep to his original direction relative to the points of compass). This was the secret of the mysterious attraction or the bending of paths, which was experienced in the region."

Eddington says that Action is the curvature of the world. Action is equal to Mass or energy multiplied by time.

Eddington has introduced the idea of entropy, which may be described as a measure of degree of 'randomness' in a physical state, by considering the shuffling of cards. He says—"The subject is relevant at this stage because it has a bearing on the deeper aspects of the problem of Time......" [1] He further explains that if a pack of new cards, arranged orderly by the maker, is shuffled for a few minutes, the previous order vanishes altogether and "will never come back, however long you shuffle. Something has been done, which cannot be undone, namely, the introduction of a random element in place of arrangement." The original arrangement of cards may return back after a long shuffling but that depends entirely on chance, which he terms as 'ghost of a chance.' This is due partly to the comparatively small number of cards in a pack.

But when a huge number of atoms are shuffled, the chances are quite remote, as the numbers of atoms are infinitely large.

Eddington has related the idea of time to the increase of entropy or randomness of the shuffling of the atoms in the world. The space-time map does not indicate the direction of its change from 'past to future or from future to past.' He comments—"It is absurd to pretend that we have no justifiable conception of 'becoming' in the external world. That dynamic quality—that significance which makes a development from

1. The Nature of the Physical World—p. 63.

past to future reasonable and a development from future to past farcical—has to do much more than pull the trigger of a nerve. It is so welded into our consciousness that a moving on of time is a condition of consciousness. We have a direct insight in 'becoming' which sweeps aside all symbolic knowledge as on an inferior plane. If I grasp the notion of existence because I myself exist, I grasp the notion of becoming because I myself 'become.' It is the innermost Ego of all which *is* and *becomes.* [1]

It seems Eddington has not identified 'becomingness' with entropy, but considers the latter as the physical criterion of the former. Hence man's insight into becoming and time is 'derived from a reading from entropy—clock in the brain.'

Braithwate is of the opinion that entropy cannot account for the passage of time (as shown by Eddington), because entropy does not always increase. He further maintains that the sense of time need not be found in physical theories, but may "quite well arise out of our consciousness of the physical world." [2]

The doctrine of entropy states that the universe is gradually running down. The organised universe is constantly decaying. It also presupposes that universe of yesterday was more organised than it is today. Thus proceeding backwards, we find more and more organised universe. But this backward process in time cannot be pursued ad infinitum. There is a definite limit to increasing organisation. Thus the doctrine of entropy leads us to the point that the universe has a beginning in time. On this basis, we are to suppose that a perfectly organised universe suddenly came into being at a particular instant in past and since then it is undergoing a gradual process of

1. The Nature of the Physical World—p. 97.

2. 'Professor Eddington's Crifford lectures'. R. B. Braithwate, Mind N. S. 38 (1929).

decay. This decaying process of universe leads us back to an actual beginning of time.

J. W. N. Sullivan comments—"It is still more startling, almost incredible, when we reflect that this amazing panorama sprang suddenly into existence a finite time ago. It emerged full-armed, as it were, out of nothing, apparently for the sole purpose of blazing its way to an eternal death. This is the scientific account. It seems to be true as far as it goes, but we cannot believe that it is the whole truth." [1]

Eddington examines the question of infinity of space and time. Like Einstein he holds that space is finite but unbounded. Thus the question of infinity of space is set at rest. But the question of infinity of time still remains as it is said that 'world is closed in its space dimensions like a sphere but it is open at both ends in time dimension.' Eddington says—"I cannot feel the difficulty of an infinite future time very seriously. The difficulty about A. D. will not happen until we reach A. D. and presumably in order to reach A. D. the difficulty must first have been solved." [2] Besides, the second law of thermodynamics states that 'the whole universe will reach thermodynamical equilibrium at a not infinitely remote date in the future.' In this state of equilibrium, the onward march of 'Time's arrow' will cease altogether. Now the difficulty of infinite past remains. It seems inconceivable to hold that there was a moment with no moment preceding it. This difficulty is also overcome by the doctrine of entropy which suggests an actual beginning of time. Thus Eddington concludes that space and time are finite.

He has also discussed about the volume of this space. According to him, space has no definite volume, as it is continually expanding. He says—"If the system of the galaxies

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1. Sullivan—Limitations of Science—p. 32.
2. The Nature of Physical World—p. 83.

extends throughout closed finite space, it can only expand if the space itself expands. That is how we are led to contemplate expanding space as well as an expanding material system."[1]

The concept of space-time unity gets a very prominent place in the philosophy of Alexander for he considers it to be the prius out of which all things of the world have emerged. According to him, pure space-time is the most simple stuff and out of this matter, life, consciousness and deity have evolved by gradually rising higher and higher. It seems he has greatly been influenced by the recent trends of modern science but his metaphysical concept of 'space-time' is quite original. Thus he borrows the idea of interdependence and interconnectedness of space and time from Minkowski, Einstein and others but he interprets it in a new and original way. It is an accepted view that matter etc. occupy space but Alexander maintains that space-time does not possess such contents but at the same time, it is held as capable of producing such elements by its essential nature of motion. Unlike modern physicists, Alexander maintains that time is not just a fourth dimension added on to the three of space, but each dimension of space is dependent on an analogous part of time. Unlike Bergson, Alexander has spatialised time in order to bestow continuity on it. He holds that time and space interpenetrates. Ordinarily, people regard space and time as separate but it is a result of abstraction. In the words of Alexander—"A little reflective consideration is sufficient to show that they are interdependent, so that there neither is Space without Time nor Time without Space; that space is in its very nature temporal and Time spatial."[2] He adduces the argument that time by itself and without space is a mere succession of discrete moments and there is nothing to hold them together

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1. New Pathways in Science—p. 218.
2. Space, Time and Deity—Vol. I. p. 44.

into a continuous whole. Continuity is the result of space penetrating into time. "Thus mere temporality of Time, its successiveness leaves no place for its continuity or togetherness......yet the two are found together in time as we experience it. If, therefore, the past instant is not to be lost as it otherwise would be, or rather since this is not the case in fact, there needs must be some continuum other than Time which can secure and sustain the togetherness of past and present, of earlier and later. This other form of being is space; that is, space supplies us with the second continuum needed to save Time from being a mere 'now'.[1] Similarly, time interpenetrating into space produces multiplicity and diversity. Space by itself and without time will remain mere blank extension with no distinction and diversification. Alexander contends—"As time in so far as it was temporal became a mere 'now', so space in so far as merely spatial becomes blank. It would be without distinguishable elements. But a continuum without elements is no continuum at all......That distinctness is not supplied by the characteristic altogetherness of space. There must therefore be some form of existence, some entity not itself spatial which distinguishes and separates the parts of Space. This other form of existence is Time."[2] Thus space and Time depend upon each other, though on different grounds. Alexander's contention is—"Without Space there would be no connection in time. Without Time there would be no points to connect."[1]

Alexander asserts that there is 'no instant of time without a position in space and no point of space without an instant of time. A point *occurs* at an instant and an instant occupies a point.'[2] It is not possible to think of the existence of a

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1. Space, Time and Deity—Vol. I. p. 46.
2. Ibid. p. 47.
3. Space, Time and Deity—Vol. I. p. 48.
4. Ibid.

portion of space without thinking of it as existing at a particular date or time, and likewise a particular time cannot be thought without thinking of it as the time of objects existing in space. Thus the reality is a continuum of points–instants. In other words, Space-Time is the stuff out of which the whole universe has evolved.

Alexander has tried to present before us a picture of continuous evolution with no gaps or hiatus. He shows that particular notions evolve out of space-time or pure motion. Next to emerge in course of evolution is life. He emphatically asserts that life emerges out of matter, and yet is continuous with matter. Alexander does not assign any unique position to mind also in the scheme of evolution. According to him, Mind is also endowed with spatio-temporal qualities. He illustrates it as follows. In the mental act of remembering, we remember a particular incident with reference to particular place and time. Thus mental acts or mind are also found in space and time. Thus it seems plausible to hold that mind is also made of the stuff of Space-Time.

Alexander has shown that values are the next emergents. But though a staunch realist, Alexander has not been able to objectify them completely. It may be borne in mind that Alexander maintains that the empirical emergents, finite motion, matter, life, mind etc. are qualities of reality. They do not depend on mind or consciousness for their existences. Both primary and secondary qualities are objective. They exist by themselves. But values exist only in relation to cognizing mind. This the dependence of values on mind, in a way, take away the reality of values and land the philosophy of Alexander to utter subjectivism. Alexander has tried to save the reality of values by saying that they depend more upon collective consciousness than on individual mind. Thus they are real though they are not the qualities of reality. They are also the emergents of Space-Time as other empirical emergents are.

The last and the highest emergent of Space-Time matrix is Deity or God. To maintain the continuity of evolution, Alexander seems to take great pains to show that God has also emerged out of the stuff of Space-Time as ordinary creatures have evolved. He does not accord any elevated position to God. For him, God is not a creator of this world. God, like other creatures, is incomplete and imperfect. Alexander says—"God then, like all things in the universe—for Space-Time itself is not in the universe, is in it—is in the strictest sense not a creator but a creature." [1] In the scale of evolution, he assigns God an elevated position but it cannot satisfy religious consciousness. Alexander contends--"God is the whole universe engaged in process towards the emergence of this new *quality*, and religion is the sentiment in us that we are drawn towards him, and caught in the movement of the world to a higher level of existence. [2]

The role of deity in emergent evolution, as pointed out by Alexander, seems to be preposterous and untenable. In the scheme of evolution, he points out that deity is the last emergent but at the same time, he maintains that it is the *nisus* of world process. In the words of Alexander--There is a *nisus* in Space-Time which, as it has borne its creatures forward through matter and life to mind, will bear them forward to some higher level of existence." [3] Thus Deity pulls the course of evolution forward. Space-Time cannot be said to be a goal in itself rather Deity is the ultimate goal of evolution.

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1. Op. Cit. Vol. II. p. 398.
2. Ibid. p. 429.
3. Ibid. p. 346.

CHAPTER X

A critical survey of the result attained.

In the Atharvaveda,[1] Kāla (time) is regarded as the creator, sustainer and destroyer of all objects. Time is the god of all. This 'Time' is the source of determinate times designated as past, present and future; but it is in itself not a duration "rather the Timeless, Eternity, to which all movable time is ever present." In this very sense, the Śvetāśvatara Upaniṣad speaks about two aspects of Brahman—Time and the Timeless (Kālaś-cā-Kālaśca). This timeless time is identified with God or Brahman. Brahman transcends all temporal determinations and is eternal. Ākāśa or space is sometimes equated with Brahman. But it is done only to show the immense vastness of Brahman which is not easily comprehensible to ordinary person. In fact, Brahman transcends all determinations whether temporal or spatial.

The Epics and the Purāṇas exalt Kāla (time) as the ultimate cause of universe. Sometimes it is considered superior even to Parameśvara. Brahmā is also consumed by Kāla. Kāla survives even after dissolution. It is the prime mover of Avyakta. In some of the Purāṇas, it is treated as the power of God which comes into operation by the will of God. Thus it is the efficient cause. In the Purāṇas, the eternity, infinity and dynamism of time are explictly emphasised.

The Purāṇas and the Epics conceive Kāla as Daiva or Fate. Fate leads the willing but compels or literally drags the unwilling. It is immanent necessity and it may not be taken as external compulsion. Fate has been treated as a powerful force in texts of the western religion and philosophy also. Atomists make a frank confession in these words—

1. Atharva-Veda—XIX. 53-54.

"Everything arises from a specific ground and is driven by necessity." The famous dictum of Socrates "no one can choose evil knowing good," suggests that man cannot be held responsible for the acts done.

Plato in his Republic and Laws assrerts human freedom but in the same book he says that man is made to be "the plaything of God." [1] While depicting the courses of Nature he points out that its eternal duration is modified by chance and human will. [2] Virgil, the Roman poet, supports the Homeric doctrine of man's destiny. [3] Even Gods are subjected to the decrees of fate. The earlier Greek Philosophers were the champions of fate, whereas the latter ones exhorted freewill. Spinoza is a stout champion of the doctrine of fate. He says, "the Boasted freedom of the will is only a consciousness of necessity. [4] Likewise Liebnitz in his treatise on the origin of evil, treats all notions of liberty "as chimeras pure and simple." He further holds that our actions are determined by inscrutable destiny. Hobbes, Locke and Hume also support the contention of Spinoza and Liebinitz. Hegel is the greatest champion of predeterminism where he pleads for preestablished harmony in the philosophy of Right. This doctrine of fate is based on long and sad experience. History says that many fighters, with undaunted zeal and courage, have failed times without number. Chivalrous heroes have fought against the rising tides of time which have swept all away, while men of comparatively little valour, endowed with the blessings of fortune have attained the rank of heroes. The hero rides the wave. Even his weakness and deficiencies turn to his advantage. He attains unhindered success. His enemies well equipped with valour and resources make unsuccessful efforts

1. Republic—VII. 185.
2. Metaphysics—VIII. 8.
3. Æneid.
4. Ethics—II. 49.

to halt his triumphant march. Kāla or Daiva favours him—that is all.

The charge of a naive fatalism is levelled against the Purāṇas and the Epics.

The Paurāṇic and the Epic writers are aware of the fact that the doctrine of fatalism is against heroic characters. Hence they hold that Puruṣakāra (human exertion) is a superior force and even Daiva can be overcome by it. It is apparent that the champions of the two sides—those who uphold the decrees of fate (Daiva) and those who plead for the effectuality of Puruṣakāra—have not arrived at any decision. This state of indecision regarding the superiority of these two forces prevails in other scriptural texts as well. In one of the most important sections of the Gāthā literature, Zoroaster says, "In the beginning there was a pair of twins, two spirits, each of a particular activity, these are the good and the base, in thought, word and deed. Choose one of these spirits. Be good and not base." [1] Buddhism has explicitly upheld that man has the capacity and freedom to act as he wills. In the commandments of Jewish sects, man's freewill is emphasised. But the Jewish sects never agreed on the point. The sadducees advocated freewill but the Pharisees, who followed the dictates of Solomon, differed and identified God with fate and exalted it as the supreme force. New testament of christianity is full of commands and promises which clearly imply that man is endowed with freedom of will. In Islamic scripture, the Koran, the vein of predestination runs all through. It says, "the matter belongeth wholly into God; for God knoweth the innermost parts of the breasts of men. No soul can die unless by the permission of God, according to what is written in the Book containing determination of things." The Sunnite believes in the decrees of fate while Shias uphold man's freedom and responsibility.

1. Yasna—XXX. 3.

Descartes admits that intellect is under the law of necessity but at the same time advocates freedom of will also.

A reconciliation has been attempted in Hitopadeśa where these two forces have been treated as component forces : yathā hyekena cakreṇa na rathasya gatirbhavet. Evaṃ pusuṣa-kāreṇa vinā daivam na sidhyate. The famous philosopher Yājñavalkya also supports the above contention of Hitopadeśa: Daive puruṣakāre ca karmasiddhir vyavasthitā Tatra daivam-abhivyaktaṁ puruṣaṁ paurvadehikam. Kant holds that nature and freedom of will can co-exist. Thus he establishes compromise between fate and human exertion.

The two forces are treated as complementary, to each other.

A clear distinction has been made between the absolute time and the conditioned time. No doubt, this distinction is seen even in the vedic concept of time; but an explicit distinction has been shown in the Purāṇas and the Epics. Absolute time is indivisible, infinite and eternal whereas the conditioned time is divisible, finite and destructible. The computation of yugas, Manvantaras and Kalpas manifests the infinite divisibility of Kāla. This aspect of Kāla is compatible with the Stoic concept of time where also infinite divisibility is emphasised.

Time is also conceived as the artful artificer who directs the cycle of creation and dissolution sportively. This aspect of Kāla is platonic in character.

Relativity of time and space is visualised in the Epics and the Purāṇas. The assignment of the yugas, ·Kalpas and Pralayas clearly shows that they are not absolute but relative entities. A fully developed concept of relativity of time and space is found in the Yogavāsiṣṭha and the Bhagavad-gitā. Modern Physics and modern thought support the relativity of time and space. Paul Brunton observes : "Suffering lengthens the hours for us, where as joy renders them too brief. A painful illness drags its weary way with slow, tormenting

feet through our lives, but ecstatic days pass as the whirlwind. Two ardent lovers who find themselves separated only for a week feel that at least a month has passed. Hence, we get only the feeling of time's swiftness or slowness, and not its mathematical measurement, because we get it entirely as something subjective, i.e., inside the perceiving mind and relative to it." [1]

He further says—"Time itself is a purely mental condition."[2]

Osborn comments—"There is also evidence that consciousness can extend to embrace wider and wider fields of perception. Events in each of these fields may pass at different rates in relation to our time sense, so that a 'year' in one field may be a moment in another." [3]

Eddington says—"Einstein has now shown that in Physics time and space are purely relative to the observer and the physical is now recognised as something definitely dependent upon the limitations of our sense perceptions of matter. Mathematically many different kinds of spaces are conceivable." [4]

James Cleark says—"All our knowledge, both of time and place, is essentially relative. We cannot describe the time of an event except by reference to some other event." [5]

Kāla is also presupposed as fully real individual who is the prius of becoming or change. This aspect of Kāla is Aristotelian in character.

The dynamism of Kāla is emphasised everywhere in the Epics, the Purāṇas and the Upapurāṇas. It is descernible both in the conception of absolute time and that of conditioned time.

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1. The Quest of the Over-Self—p. 116.
2. Ibid.—p. 117.
3. The Super-Physical—p. 137.
4. Time, Spaee and Gravitation—p. 43.
5. Matter and Motion—p. 163.

The concept of space and time in Buddhist Philosophy may safely be categorised under the following heads—

(a) Space and time are conceived as independent entities.

(b) Space and time are the evolved products of thinking mind.
In other words, they are purely subjective.

(c) Space and time are considered as the ultimate units and these units are dynamic in their character.

The first view has been advocated by the Sarvāstivādins, who hold that "Everything exists" or Sarvam asti. They asserted that "the past exists, the future exists, the present exists." They have also emphasised the existence of past, present and future as real thing (Dravyatā). They consider space and time to be as real as the Nirvāṇa itself. (It is indicated in Kathāvatthu). This view is supported by Jaina and Nyāya Philosophies of the East and by Newton and Prof. James in the West.

According to Jaina Philosophy, space and time are independent existences and they are named as Dravya. Nyāya-Vaiśeṣika Philosophies consider space and time as individuals and not as universals. In the words of Sir James Jeans—"Newton supposed that all objects could be located in his absolute space and that all events, wherever they occurred could be assigned positions uniquely and objectively on an everflowing stream of absolute time."

Prof. James maintains that the idea of extensity in each and every sensation is the original sensation of space out of which the exact knowledge of space has been carved out by different process.

This theory of space and time fits in well with the scientific knowledge of the seventeenth century. But modern investigations have proved that space and time are "abstractions and selections from something complex, namely, a blend of space and time which comprises both."

The second view is chiefly held by Buddhaghoṣa, Vijñānavādins, Sautrāntikas and Mādhyamikas.

An eminent thinker like Buddhaghoṣa is of the opinion that the idea of space and time is apriori, evolved by the thinking mind from within. They are not independent existences rather they are the subjective 'forms' under which the thinking mind conceives things. Thus space and time have no objective existence outside our minds. Candrakirti says that space and time are devoid of reality.

Vijñānavādins go so far as to maintain that space and time are nothing more than mere consciousness. They are unavoidable illusions of our finite consciousness. They are like small waves in the vast ocean of consciousness.

Sautrāntikas also agree to admit that space and time are nothing more than illusions of finite minds. They are not at all independent reals. In the words of M. Hiriyana, "Time and space are equally mental devices and no Sva-Lakṣaṇa in itself has either extension or duration, but they are not reckoned separately because their conception is relational." [1]

Liebnitz supports this view and says that space and time are the products of confused perceptions.

The above theory is partially correct but they have gone too far to maintain that they (space and time) are only subjective illusions. Finite things must exist in space and time. In other words, they make the simultaneous existence and reality of finite things possible. Thus we may come to the conclusion that space and time may originate from the thinking mind but they are objectively real also.

The third view is chiefly held by the Śūnyavādins and by those who assert the theory of momentariness.

According to Śūnyavādins, Śūnya or Ākāśa is the ultimate reality. The concept of Ākāśa has been elaborately discussed

1. Outlines of Indian Philosophy—p. 216.

by the Buddhist philosophers. Ākāśa is considered parallel to Nirvāṇa and it is also taken as beginningless and endless. But this dualism of Ākāśa and Nirvāṇa is not tenable. So the Śūnyavādins have ultimately established the unity of 'Ākāśa', 'Saṁsāra' and 'Nirvāṇa'. They prove that 'Śūnya' and 'Nirvāṇa' are one and the same reality as in the state of Nirvāṇa there is cessation (Śūnyatā) of suffering. This Saṁsāra is also Śūnya because it evolved out of space and time by their peculiar mixture in different proportions.

The doctrine of momentariness maintains that 'Momentariness' is the ultimate truth. Thus time has been reduced to atomic moments and the only real time is the present moment. Every thing of the world is changing from moment to moment but momentariness itself is not momentary. These moments are considered as dynamic units. This concept of momentariness is akin to the concept of 'Duree' of Bergson. This doctrine also holds that 'Dhamma' and 'Kṣaṇa' are the one and the same reality. Whitehead also subscribes to this view. He conceives space and time as 'a fluent stream analysable into both space order and time order.' He further says that they are "drops of Experience."

The above doctrine is no doubt an important one but it reduces mind or consciousness to non-entity, hence it is not tenable. Mind or consciousness is the ultimate reality. Space and time depend on it (mind) for their existence. They are merely the two forms of mind or consciousness.

Time and space may be taken to be an 'inter-related system' which is 'dynamic in its character.'

Jaina thinkers assert the reality of kāla (time) and Ākāśa (space). These two substances are the substratum of the universe. Nyāya and Vaiśeṣika philosophies also support Jaina thought. But Vaiśeṣika Philosophy is confined to empirical time (Vyavahārakāla) alone. Jaina concept of time and space stands in fair comparison with the modern scientific concepts.

Like Jaina thinkers, there is a tendency in modern science to posit time as a reality, though it has not yet been adopted as a doctrine. Eddington says—"Time is more physical reality than matter."

According to Jaina Philosophy, reality is that which has origination, decay and permanence. Laws of conservation of matter and energy clearly point out that even destructible elements possess permanence. Democritus says—"Nothing can never become something, something can never become nothing."

This philosophy has made a clear distinction between empirical time (Vyavahāra-kāla) and transcendental time (Niścaya-kāla). Modern sciences support the above distinction. Eddington says—"whatever may be time de jure, the Astronomer Royal's time is time de facto." [1]

Kāla possesses only one Pradeśa hence it has continuance (Vartanā). Continuity (Vartanā) is the very characteristic of kāla. Bergson says, "the continuity of time is due to the spatialisation or absence of magnitude." Like Einstein, Jaina philosophy maintains that 'kāla' is monodimensional.

This thought further holds that 'Kāla' is destitute of magnitude. This idea is supported by Eddington in these words—"I shall use the phrase 'time's arrow' to express this one-way property of time which has no analogue in space." [2]

Infinity of kāla or time is accepted by Einstein : "The world is closed in space-dimensions but it is open at both ends to time dimensions.

'Kālāṇus' of Jaina thought is akin to the 'worldwide instants' of modern science.

Jaina thought holds that ākāśa or space is infinite. It compares favourably with the orthodox view prior to the theory

1. The Nature of Physical World—p. 36.
2. The Nature of Physical World—p. 69.

of relativity which held that space was infinite. Eddington comments—"Space is finite but it has no end." [1]

Einstein says that space is "finite but unbounded." According to him, the finitude of space is due to matter. In absence of matter, space is infinite.

The Nyāya-Vaiśeṣika holds space and time as ultimate and objective realities. They are as real as earth, water, fire etc. are. Nyāya-Vaiśeṣika realism is a commonsense realism. This realism regards the world in space and in time. According to this standpoint, space and time are more fundamental and more real than anything else. The Nyāya-Vaiśeṣika regards space and time as substances but it also holds that other substances exist in space and time, According to it, the soul does not exist in space but it also exists in time. Thus the Nyāya-Vaiśeṣika maintains like common sense realism that the world constitutes a spatio-temporal series.

The Nyāya-Vaiśeṣika considers space and time as empty containers. This view is much like the Newtonian concept of space and time. Matter cannot be conceived away from its space quality or extendedness. Space as empty container is an abstraction. Likewise time as an empty possibility of succession is an abstraction.

In Western Philosophy, Kant had to face similar difficulty as he held space and time as objectively real and at the same time different from the contents of the world. He reconciled the contradiction by reducing space and time to subjective ways of intuition. According to him, space and time were forms of perception—which mind supplied from within.

Bergson and Alexander do not approve of the position of the Nvāya-Vaiśeṣika. They do not regard space and time as empty containers which are filled by the contents from outside. They do not also hold that space and time are forms of

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1. Ibid.—p. 80.

perception. According to Bergson, time is such force as creates and transforms. Bergson contends—"The flux of time is reality itself, and the things which are steady are the things which flow." [1] About space he says—"the mind finds space in things, but could have got it without them if it had imagination strong enough to push the inversion of its own natural movement to the end." [2] In a way, Bergson accepts the Kantain view regarding space with slight modification. Bergson does not consider space to be as fundamental as time. Alexander does not regard space and time as separable entities. He is an ardent advocate of space-time unity. He comments—"Space and Time are not two things but one and there is no space without time nor time without space." [3] He further says—"This space-time is the stuff of which all existents are composed." [4] Both Bergson and Alexander regard time as the fundamental reality but they differ as far as space is concerned.

In the Nyāya-Vaiśeṣika system, time has been conceived as an ever-present element. The past and the future are interrelated with the present.

The cessation of action (the past) and the prenon-existence of action (the future) are the facts of the present. Ordinarily we consider an event to be present or future only when the particular event has lost its presentness. But a searching analysis will show that it is related to the present i.e. to the time, if it is comprehended as something which is or was or will be. The Nyāya-Vaiśeṣika emphatically holds that the very existence of a thing presupposes its relation with time.

The Nyāya-Vaiśeṣikas, resemble to a fair degree with the modern realist like Alexander, when they conceive time as an

1. Creative Evolution—p. 363.
2. Ibid.—p. 213.
3. Space, Time & Deity—Vol. II. p. 29.
4. Ibid.—p. 428.

eternal entity and as a producer of all produced. Alexander also conceives time (combined with space) as an ultimate entity out of which everything has evolved. [1] Further, Alexander also holds that time is not apprehended 'by senses', though "Our experience of space and time is provoked through senses." [2] But it should be borne in mind that according to Alexander, we have intuition of space and time prior to sensations; and it is only on the basis of intuition that they are "immediately apprehended."

The Naiyāyikas do not admit either the intuition or the sensation of time.

But the Naiyāyika position in denying the immediate knowledge of even finite times or durations viz. 'now', 'then', 'present' etc. does not seem to be plausible. If we have no knowledge of 'near' and 'distant' in time, we cannot reasonably infer time at all. The inference of a universal time presupposes the direct experience of finite times. Thus the Vedāntins and the Mīmāṁsakas are quite consistent in holding that time can be directly perceived.

The Naiyāyikas uphold the Kantian doctrine of time when they say that time is the cause of speech (Vyavahāra) or thought (Dhī). [3] It roughly corresponds with the Kantian doctrine that time is given apriori.

Further we propose to examine whether time is comprehended as atomic point or as an extended span. It has been fully discussed by James in western philosophy.

Indian Philosophy has not made a searching analysis though it has discussed this aspect. In Tattvacintāmaṇi of Gaṅgeśa, it is said—"Since Kṣaṇāḥ (atomic points) are imperceptible, the present (Vartamāna) is known through a

1. Space, Time and Deity.

2. Ibid.—Vol. II. pp. 144-48.

3. Bhā. P.—45. (quoted above).

finite or a measurable (Sthūla) limiting condition (Upādhi)."[1] In Nyāyatātparyaṭīkā, it is stated : "because the atomic points of time are never perceived by us who have the eyes of flesh."

The above remarks show that Indian thinkers were aware of the difficulty when the atomic points of time are thought to be objects of perception.

In Sākṁhya texts, the problem of time and space has not been seriously dealt with, though some of the texts touch the problem. Time is reduced to the movement of the guṇas. In the state of equipoise, the movement of guṇas remains in the state of arrest. This aspect of time may be treated as duration. Thus time vanishes but still its reality remains as it is indistinguishable from the guṇas themselves. This concept of time is akin to the concept of time of Bergson. According to Bergson, time is duration which is of the nature of real change itself. [2]

According to the Sāṁkhya-yoga system, Time is not considered as eternal substance which is apart from Kṣaṇa. This view is very akin to that of the Buddhist Sautrāntika school which holds that time consists of Kṣaṇas.

Reduction of time to Kṣaṇas or moments gives us an idea that this doctrine is like the Buddhist theory of momentariness. But there is a basic difference between the two systems. In Sāṁkhya-yoga, time alone is momentary but the things are permanent, whereas Buddhist doctrine treats both time and things as momentary rather as one; without a content being a mere idea.

The Sāṁkhya-yoga clearly maintains that the notions of time and space do not represent any reality beyond us. These two

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1. Pratyakṣa-Cintāmaṇi, p. 380—
 "......Kṣaṇānām atīndriyatvāt, sthūlopādhim
 ādāya vartamānatva-grahāt."
2. Creative Evolution—p. 5.

are the schema of human understanding.[1] But the Nyāya-vaiśeṣikas treat them as eternal substances. The Sāṁkhya-yoga contends that ideas conveyed by words are those that do not claim to represent experience, hence they cannot be termed either as false or true. Such terms are infinity, eternity and the like. It can be better expressed in the words of Mr. Ghosh—"Such are many terms with a negative implication like infinity, eternity and absolute want. And such is also time as well as space, for in time succession and the facts that succeed one another, duration and the objects that endure are mentally separated. But the artificiality of the conception comes to be lost sight of when with the morbid growth of abstract thought, men acquire the habit of taking words for things. And then they scout the idea that beyond the facts there is nothing, and since they cannot get to the last of them by boldest sweep forward nor recover the first by glancing back, they conclude that time, their supposed container, must be both beginningless and endless."[2]

The emphasis of the Sāṁkhya-yoga on Kṣaṇa or moment may favourably be compared with the Aristotelian concept of time. Aristotle holds—'Now since time cannot axist and is unthinkable apart from the moment, and the moment is a kind of middle point uniting as it does in itself both a beginning and an end, a beginning of future and an end of past time, it follows that there must always be time : for the extremity of the last period of time that we take must be found in some moment, since time contains no point of contact for us except the moment."[3]

The concept of time and space as conceived in this system clearly manifests the idealistic bias. But realism is established as it maintains that space possesses external reality and time

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1. YBhā.—III. 52.
2. A Study of Yoga—p. 262.
3. Physib—251, 19-28.

also has its basis in the spatial motion of atoms. From this point of view its realism may fairly be compared with that of Herbart & Lotze. But the Phenomena or appearances in the Sāṁkhya-yoga are not as phenomenal as that of Herbart. All determinations possess true reality in the Sāṁkhya-yoga. Whereas Herbart holds that phenomenal experiences do not represent the true aspect of things.

The Mīmāṁsakas are staunch realists and they emphatically assert the objective existence of space and time like the Naiyāyikas and the Vaiśeṣikas.

In the Mīmāṁsā texts, divergent views have been held regarding the direct perceptibility of time. Prabhākara denies the direct perceptibility of Dik, Ākāśa and Kāla as they do not possess colour or magnitude. But Bhāṭṭa Mīmāṁsakas maintain that these entities are perceptible and have taken great pains to prove it. The view of this school resembles that of Kant who holds "only on the pre-supposition of time can we represent to ourselves a number of things existing at one and the same time (simultaneously) or at different times (successively)." The resemblance of the two rests with the fact that both of them agree in holding givenness of time as a necessary element in all experiences. They differ widely on the question of the existence of time. While Mīmāṁsakas maintain the objective existence of time, Kant does not. According to Kant, time is one of the forms of intuition. It is never an element of experience, it is given apriori. Kant, however, maintains the empirical reality of time in relation to all objects that are capable of being presented to our senses. The argument of Kant seems to be inconsistent as he holds that time is pure intuition or non-sensuous but at the same time he makes sensuous perception the test of empirical reality. In fact, pure intuition has no connection with sensuous perception.

The Mīmāṁsakas have not elaborately discussed the origin of time as they hold that space and time are eternal.

They deny that time and space take an active part in the process of creation. According to them, God Himself is the creator. This view differs with that of modern physics which considers space as a necessary factor in the creation of the physical universe.[1]

The Advaita Vedānta and other Vedānta schools deal with the origination of time and space. According to the Advaita Vedānta, time and space have a beginning and also an end. Time is not a creator of the universe whereas Ākāśa (space) assists in the creation of universe. But ākāśa is also created like other created objects. Other Vedānta schools regard time and space as beginningless and endless. They also treat these principles as eternal. Madhva says that space remains unaffected by the process of creation and dissolution.

The Advaita Vedānta speaks about the periodic creation and dissolution, consequently the origination and the end of time and space are also thought of. Modern physics has dealt with the problem of origination of time and space along with the doctaine of entropy. Barnett speaking about the dissolution of the universe says—"Time itself will come to end for entropy points to the direction of time."[2]

Modern physicists speak about the finitude of space but they hold that time is infinite. The finitude of space in a way refers to its origination but expressly they do not speak about it. Eddington has discussed the problem of finitude and infinitude of time but he has not arrived at any convincing conclusion,[3] though he is of the opinion that time is infinite. Some Viśiṣṭādvaitins also hold that time is apparently infinite.

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1. Āpadeva's remark—Iśvaro gata-kalpīyaṁ vedam asmin kalpe smṛtvopadiśati. p. 2.
2. Barnett—The Universe and Dr. Einstein—p. 111.
3. Eddington—The Nature of the Physical World and New Pathways in Science.

It seems that modern physicists are not sure about the fate of time at the stage of dissolution. Eddington observes—"That does not mean time will cease to exist; it exists and extends but there is no longer any dynamic quality in it. A state of thermodynamic equilibrium is necessarily a state of death." Thus it may be observed that modern physics in a way envisages the end of time.

Space plays an important part in the creative process. Rather it is the prerequisite of the creation of the universe. According to the Advaita Vedānta, space alone participates in the creation of the universe. But Śruti is silent over the participation of time in the process of creation. Veṅkaṭa, however, holds that time is the generic cause of all objects. The view of modern physics is very akin to this Vedāntic view. A. N. Whitehead observes—"You cannot have space without things or things without space." Eddington also holds such view. Sir James Jeans comments—"Science finds, however, that the pattern of events in the outer world is consistent with and can be explained by the supposition that material bodies are permanently located in and move about in space." [1]

Sullivan says—"Both time and space are essential for the existence of matter." [2]

From the above observation, it is quite clear that the existence of things can be thought of only in spatial and temporal order. In other words, they are arranged in spatial and temporal order. Abstract space can be thought of but things without space are inconceivable. Thus it may be contended that time and space are pre-conditions of creation.

The Advaita Vedānta contends that space is not only the passive container of created objects but it also plays an

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1. Sir James Jeans—Physics and Philosophy p. 56.
2. Sullivan—The Limitations of Science—p. 66.

active and dynamic role in the creative process. But this text is silent about time. Some texts of the Viśiṣṭādvaita speak about the participation of time also in the creative process. Recent discoveries of modern physics support the stand of the Vedānta. The nineteenth century physicists regarded space as a passive container of matter only.

Einstein observes—"In the mind of the physicists space remained until the most recent times simply the passive container of all elements, playing no part in the physical happenings itself." [1] Eddington also comments—"............so that it is no longer a mere background against which the extension and motion of matter is perceived but it is as much a performer in the world drama as matter........." [2]

Barnett observes—"Whenever there is matter and motion, the continuum (space-time) is disturbed just as a fish swimming in the sea agitates the water around it, so also a star, a comet or a galaxy distorts, the geometry of space—time through which it moves." [3]

Thus Vedānta rightly holds that space and time are active participants in the creative process.

According to Advaita Vedānta, space is finite in volume. The Viśiṣṭādvaita maintains that space appears as infinite but it is finite in relation to Māyika Īśvara. New discoveries of physics establish that entire space including the universe in it is finite.

Sullivan comments—"The great change that has now occurred in our way of thinking since the days of Copernicus is that the modern conception of universe as finite. This does not mean merely that there is finite amount of matter in space, but space itself is finite." [4]

1. Einstein—The world as I see it.
2. Eddington—New Pathways in Science—p. 40.
3. Barnett—The Universe and Dr. Einstein—p. 92.
4. Sullivan—The Limitations of Science—p. 23.

Einstein is of the opinion that space including the universe in it is finite. He adduces two reasons for believing this theory. His first reason was not acceptable to many and he seemed to be influenced by Mach. Mach maintained that inertia of a body increases when the other bodies in the universe are brought nearer to it. Einstein contended that this could be possible only in the finite universe.

The other argument seems to be more plausible to the scientists. If the celestial bodies were subject to the gravitational influence alone then the mean velocities of the stars of a cluster would be, as it has been found out, much greater than what they actually are. This shows that there is an all-pervading field of force which diminishes the influence of gravitation. Now it is the property of a finite static universe to have such a field. Consequently Einstein maintains that space is finite and unbounded.

Let us now consider the implications involved in characterising space as finite and unbounded. Space can be at once finite and unbounded just as a circle can be said to be so because its length is finite while it has no beginning or an end i.e., no boundness, for space is spherical. It is no longer a flat surface. Einstein considers space-time as curved. Eddington observes—"This closing up of space so that its volume is finite and distances cannot exceed a finite limit also results from the curvature." [1]

The contention of the Vedānta that space is relatively infinite compares favourably with the concept of space as finite and unbounded. Vedānta conceives the universe as elliptical, which we know from the term Brahmāṇḍa for universe. In a way, it gives the idea of a curved space.

The Advaita Vedānta regards time and space as relative and interdependent entities for they depend on something else for

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1 Eddington—New Pathways in Science—p. 217.

their realities. Time and space are not absolutely independent. Vallabha, the exponent of the Śuddhādvaita, contends that real time shares the nature of Brahman who is the ultimate reality. Thus he admits independence of time but at the same time, he also maintains that empirical time does not enjoy such status. It may be remarked that he also gives only relative independence to time. Time and space depend on external objects and occurring events. If time and space were divested of external objects and ocurring events, they would be reduced to non-entity. Thus their association with external objects and events takes away their independence and absoluteness. Newton regarded time and space as independent and absolute entities. Jeans comments—"Newton described space in which measurements were from them as absolute......Newton assumed that a universal time—'flows equably and without regard to anything external' throughout the universe. This we describe as absolute time." [1]

Einstein does not accept the Newtonian concept of time and space. According to Einstein space has reality only as an order of the objects contained in it likewise time can be conceived only by the order of events. His theory of relativity envisages the interdependence of all phenomena of the universe. He further contends that time and space are relative for their variation depends on the observer's motion. He interlinks time and space. He holds that geometrical properties and space vary according to observer's motion. Thus space is linked with time. Further he holds that flow of time changes with the motion of observer which clearly points out that time is related to space.

Einstein observes—"......Space is exactly as Reimann guessed, no longer absolute." [2] Commenting on the relativity of time and space, Whetham says—"Space and time are now

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1. Jeans—Physics and Philosophy—p. 58.
2. Einstein—The World as I see it.

relative to the observer, and there is no one cosmic space or cosmic time." [1]

Sullivan observes—"There is nothing absolute about space or time......Different observers make different estimates of the space and of the time, separating two events." [2]

Minkowski comments—"Space and time separately have vanished into the merest shadows, and only a sort of combination of the two preserves any reality." [3]

The Phenomenal events occur in space-time continuum. Nature itself is related to four-dimensional space-time continuum. Jeans observes—"Nature refuses to break up the four-dimensional space-time into an absolute space and an absolute time for us." [4]

We have seen that Vedāntins have taken great pains to refute the position of some Buddhists who regard space as pure negation. The Vedāntins maintain that space and time are positive entities. Matter is scattered and strewn in space hence pure emptiness is a figment of imagination. Jeans and Eddington interrelate time with change. Eddington observes—"We discover a signpost for time in the physical world itself." [5]

The Advaita Vedānta maintains that time is subjective element. Jeans calls it 'perceptual time.' Such time depends on the estimation of the percipient. Bhagwan Das comments—"The quick or slow passage of time is something subjective, and the real significance of length or shortness of time is also subjective, being only the feel of such a length or shortness." [6] Emphasising the subjectivism of time, Paul Brunton speaks—

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1. Whetham—A History of Science—p. 470.
2. Sullivan—The Limitations of Science—p. 81.
3. Quoted by Jeans in The Mysterious Universe—p. 127.
4. Jeans—The Growth of Physical Science—p. 296.
5. Eddington—New Path ways in Science—p. 54.
6. Bhagawan Das—Science of Peace—p. 227.

"There is no such thing as an absolute measure of time, only our mental impressions of it : time is how we think it." [1]

He further observes—"The sense of time lies in the mind itself, in the percepts and concepts ; which are its product." [2]

Prof. Planck, in an interview with Prof. J, W. N. Sullivan, observes—"Men must learn to regard space and time not as objective realities............... They are objective realities independent of consciousness and perhaps none such exist." [3]

In the Vedānta texts, space, time and causality form one continuum. They are inseparably related. Swami Vivekānanda observes—"It was Śaṁkara who first found out the idea of identity of time, space and causation with Māyā." [4] Swami Madhvatirtha observes—"Time and space are both Māya in modern physics and also in Philosophy." [5] Space, time and causality are said to represent Māyā of the Advaita Vedānta.

The Vedānta concept of space and time favourably compares with the concept of Prof. Alexander who holds that the universe has emerged out of space-time unity. But for the Vedānta, Brahman is the first and the highest reality. He is the beginning and the end of the world. For Prof. Alexander, Deity is the end of the world but not its beginning. For the Vedānta, Brahman alone is the absolute reality, he consumes even space and time. [6]

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1. Brunton—The Quest of Over-self—p. 110.
2. Ibid—p. 118.
3. The observer—January 25, 1934.
4. Swami Vivekananda—The Complete Works—Vol. II. p. 342.
5. Swami Madhvatirtha—Māyā—p. 1.
6. Space, Time, Deity—Vol. II. p. 364.

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